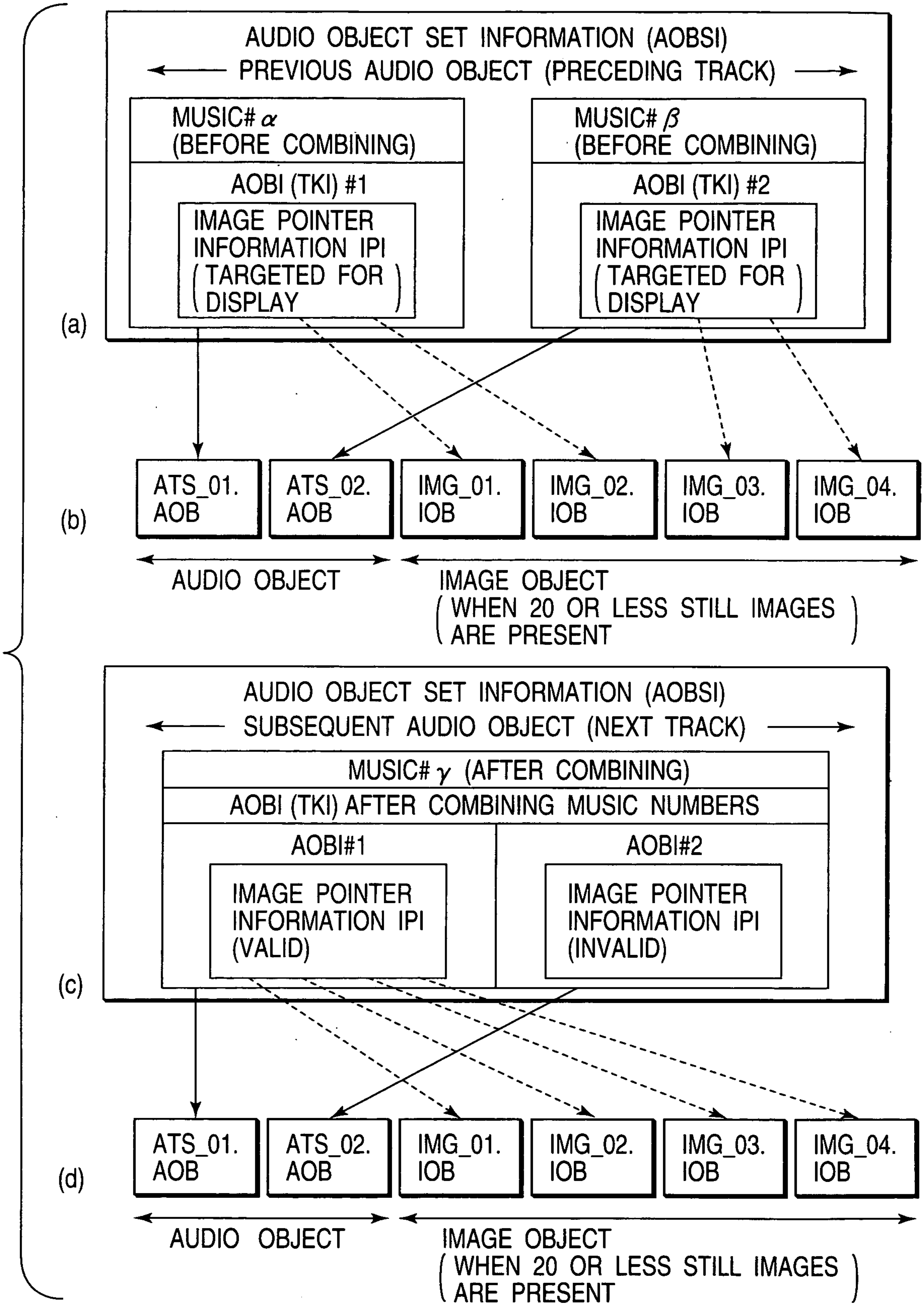

AUDIO OBJECT SET INFORMATION (AOBSI)
PREVIOUS AUDIO OBJECT (PRECEDING TRACK)
MUSIC# α (BEFORE COMBINING)
AOBI (TKI) #1
IMAGE POINTER INFORMATION IPI (TARGETED FOR DISPLAY)
MUSIC# β (BEFORE COMBINING)
AOBI (TKI) #2
IMAGE POINTER INFORMATION IPI (TARGETED FOR DISPLAY)
(a)
ATS_01. AOB
ATS_02. AOB
IMG_01. IOB
IMG_02. IOB
IMG_03. IOB
IMG_04. IOB
(b)
AUDIO OBJECT
IMAGE OBJECT (WHEN 20 OR LESS STILL IMAGES ARE PRESENT)
AUDIO OBJECT SET INFORMATION (AOBSI)
SUBSEQUENT AUDIO OBJECT (NEXT TRACK)
MUSIC# γ (AFTER COMBINING)
AOBI (TKI) AFTER COMBINING MUSIC NUMBERS
AOBI#1
IMAGE POINTER INFORMATION IPI (VALID)
AOBI#2
IMAGE POINTER INFORMATION IPI (INVALID)
(c)
ATS_01. AOB
ATS_02. AOB
IMG_01. IOB
IMG_02. IOB
IMG_03. IOB
IMG_04. IOB
(d)
AUDIO OBJECT
IMAGE OBJECT (WHEN 20 OR LESS STILL IMAGES ARE PRESENT)

FIG. 1

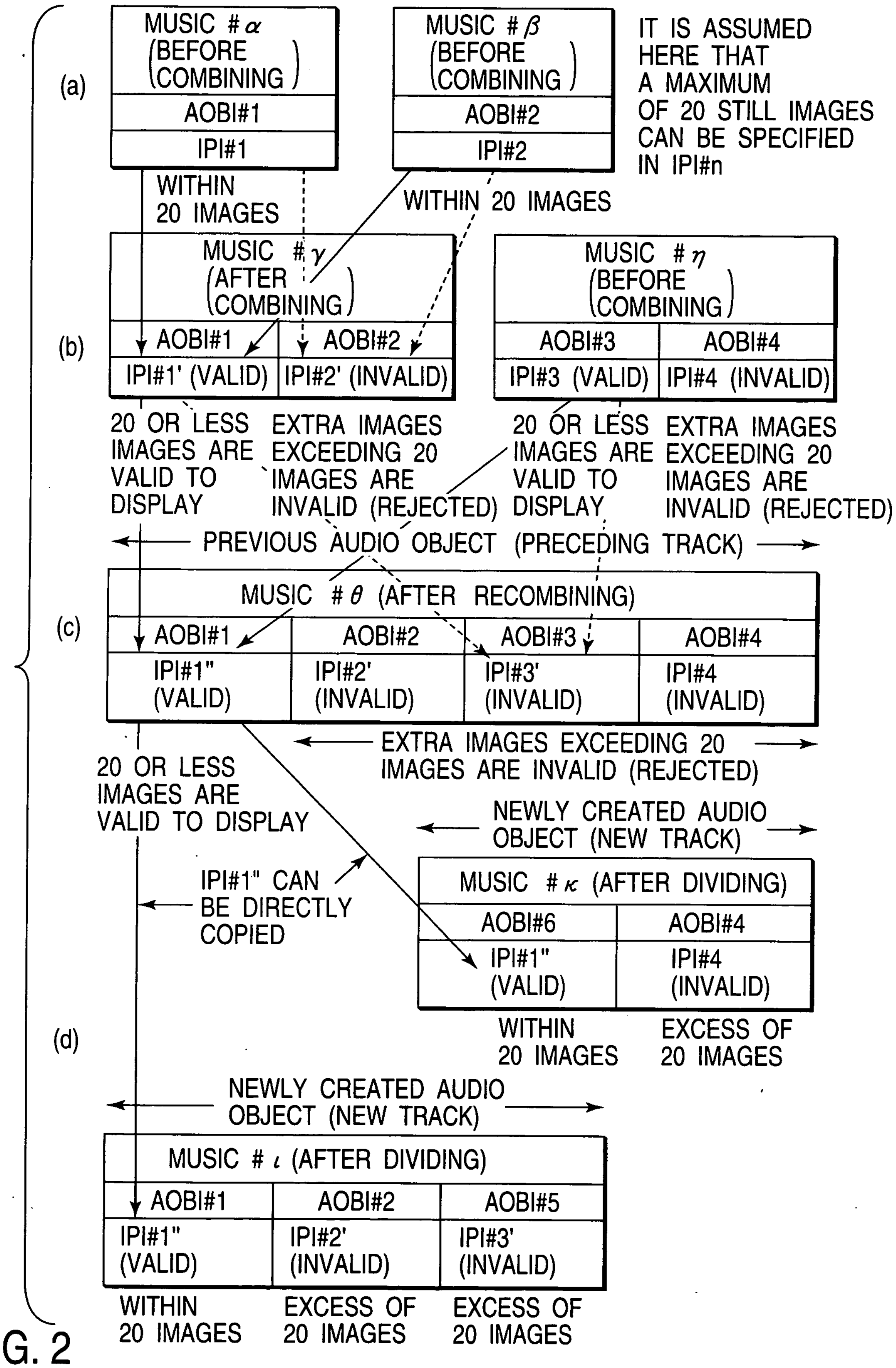

(a)
MUSIC #α (BEFORE COMBINING)
AOBI#1
IPI#1
MUSIC #β (BEFORE COMBINING)
AOBI#2
IPI#2
IT IS ASSUMED HERE THAT A MAXIMUM OF 20 STILL IMAGES CAN BE SPECIFIED IN IPI#n
WITHIN 20 IMAGES
WITHIN 20 IMAGES
(b)
MUSIC #γ (AFTER COMBINING)
AOBI#1
AOBI#2
IPI#1' (VALID)
IPI#2' (INVALID)
MUSIC #η (BEFORE COMBINING)
AOBI#3
AOBI#4
IPI#3 (VALID)
IPI#4 (INVALID)
20 OR LESS IMAGES ARE VALID TO DISPLAY
EXTRA IMAGES EXCEEDING 20 IMAGES ARE INVALID (REJECTED)
20 OR LESS IMAGES ARE VALID TO DISPLAY
EXTRA IMAGES EXCEEDING 20 IMAGES ARE INVALID (REJECTED)
PREVIOUS AUDIO OBJECT (PRECEDING TRACK)
(c)
MUSIC #θ (AFTER RECOMBINING)
AOBI#1
AOBI#2
AOBI#3
AOBI#4
IPI#1" (VALID)
IPI#2' (INVALID)
IPI#3' (INVALID)
IPI#4 (INVALID)
EXTRA IMAGES EXCEEDING 20 IMAGES ARE INVALID (REJECTED)
20 OR LESS IMAGES ARE VALID TO DISPLAY
NEWLY CREATED AUDIO OBJECT (NEW TRACK)
IPI#1" CAN BE DIRECTLY COPIED
MUSIC #κ (AFTER DIVIDING)
AOBI#6
AOBI#4
IPI#1" (VALID)
IPI#4 (INVALID)
WITHIN 20 IMAGES
EXCESS OF 20 IMAGES
(d)
NEWLY CREATED AUDIO OBJECT (NEW TRACK)
MUSIC #ι (AFTER DIVIDING)
AOBI#1
AOBI#2
AOBI#5
IPI#1" (VALID)
IPI#2' (INVALID)
IPI#3' (INVALID)
WITHIN 20 IMAGES
EXCESS OF 20 IMAGES
EXCESS OF 20 IMAGES

FIG. 2

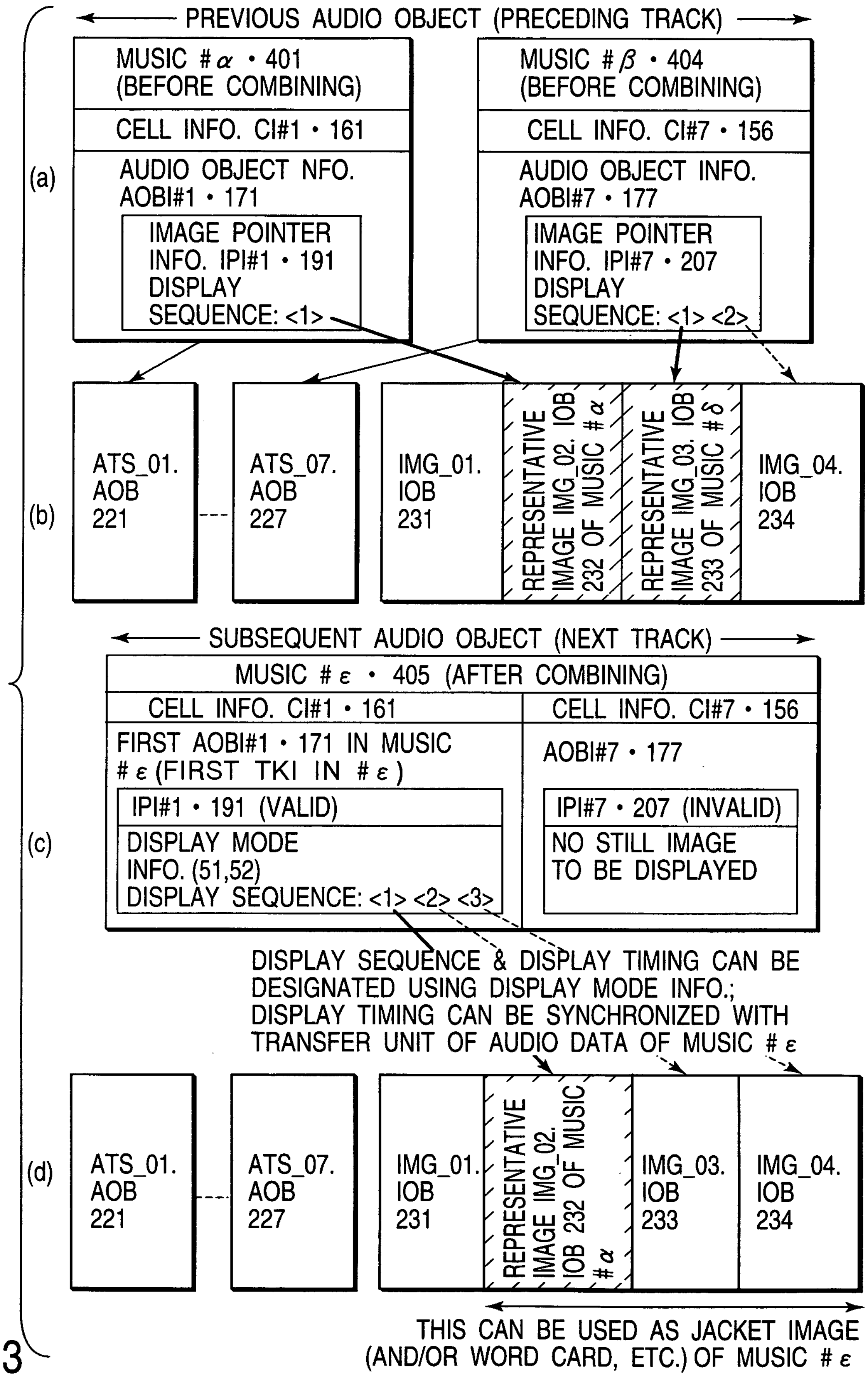

PREVIOUS AUDIO OBJECT (PRECEDING TRACK)
(a)
MUSIC #α • 401
(BEFORE COMBINING)
CELL INFO. CI#1 • 161
AUDIO OBJECT NFO.
AOBI#1 • 171
IMAGE POINTER
INFO. IPI#1 • 191
DISPLAY
SEQUENCE: <1>
MUSIC #β • 404
(BEFORE COMBINING)
CELL INFO. CI#7 • 156
AUDIO OBJECT INFO.
AOBI#7 • 177
IMAGE POINTER
INFO. IPI#7 • 207
DISPLAY
SEQUENCE: <1> <2>
(b)
ATS_01.
AOB
221
ATS_07.
AOB
227
IMG_01.
IOB
231
REPRESENTATIVE
IMAGE IMG_02. IOB
232 OF MUSIC #α
REPRESENTATIVE
IMAGE IMG_03. IOB
233 OF MUSIC #δ
IMG_04.
IOB
234
SUBSEQUENT AUDIO OBJECT (NEXT TRACK)
(c)
MUSIC #ε • 405 (AFTER COMBINING)
CELL INFO. CI#1 • 161
CELL INFO. CI#7 • 156
FIRST AOBI#1 • 171 IN MUSIC
#ε (FIRST TKI IN #ε)
AOBI#7 • 177
IPI#1 • 191 (VALID)
DISPLAY MODE
INFO. (51,52)
DISPLAY SEQUENCE: <1> <2> <3>
IPI#7 • 207 (INVALID)
NO STILL IMAGE
TO BE DISPLAYED
DISPLAY SEQUENCE & DISPLAY TIMING CAN BE
DESIGNATED USING DISPLAY MODE INFO.;
DISPLAY TIMING CAN BE SYNCHRONIZED WITH
TRANSFER UNIT OF AUDIO DATA OF MUSIC #ε
(d)
ATS_01.
AOB
221
ATS_07.
AOB
227
IMG_01.
IOB
231
REPRESENTATIVE
IMAGE IMG_02.
IOB 232 OF MUSIC
#α
IMG_03.
IOB
233
IMG_04.
IOB
234
THIS CAN BE USED AS JACKET IMAGE
(AND/OR WORD CARD, ETC.) OF MUSIC #ε

FIG. 3

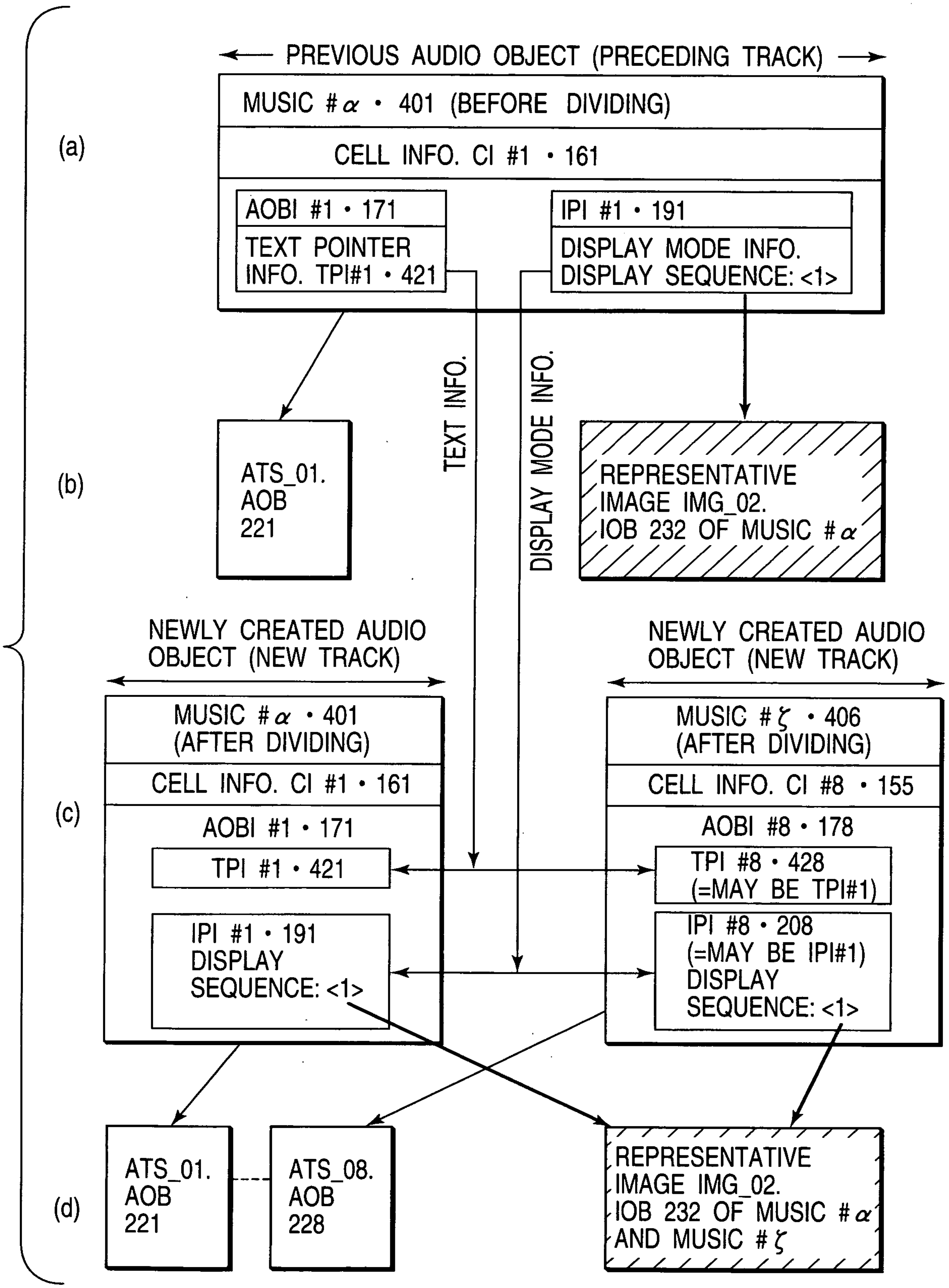
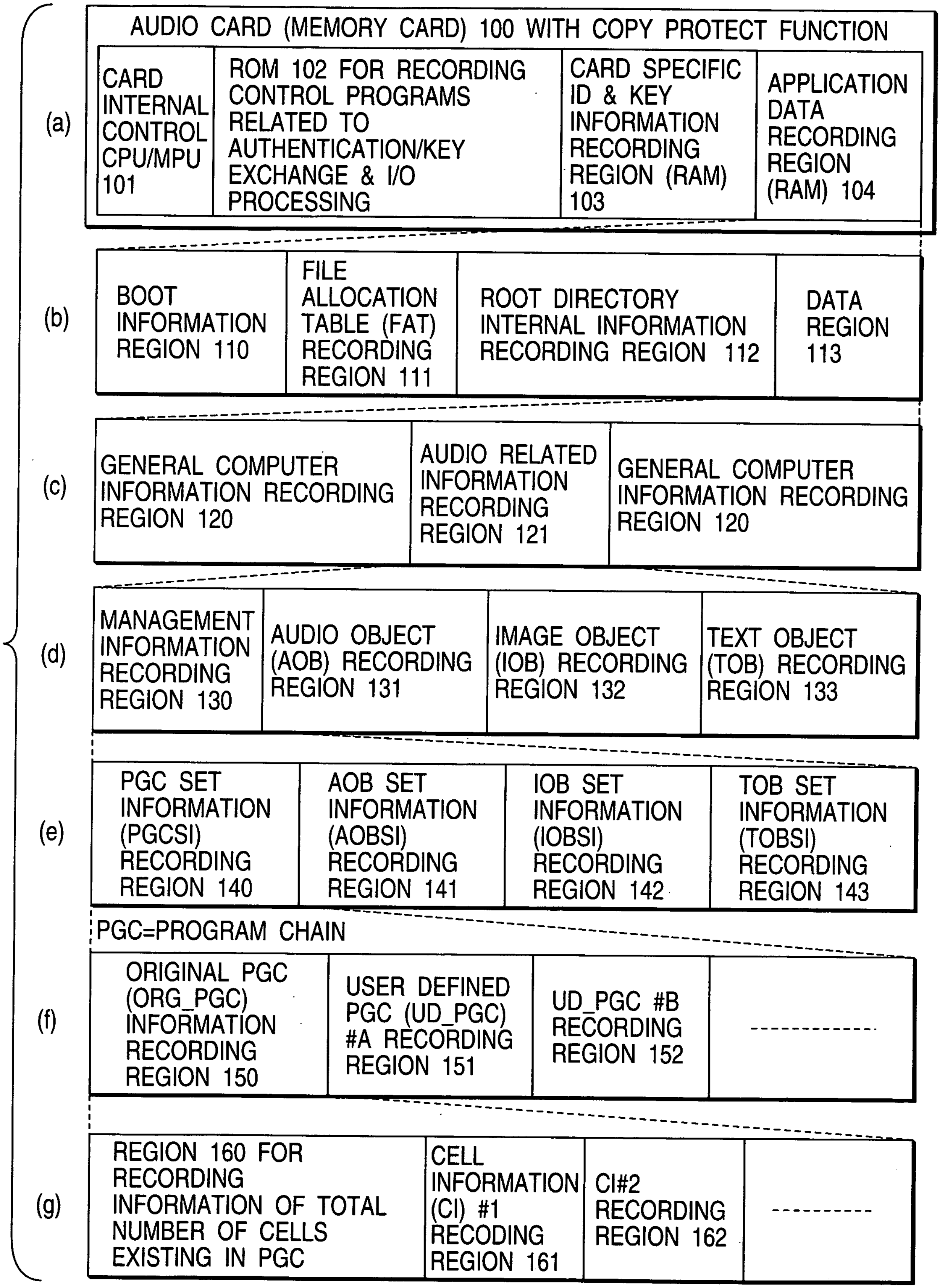
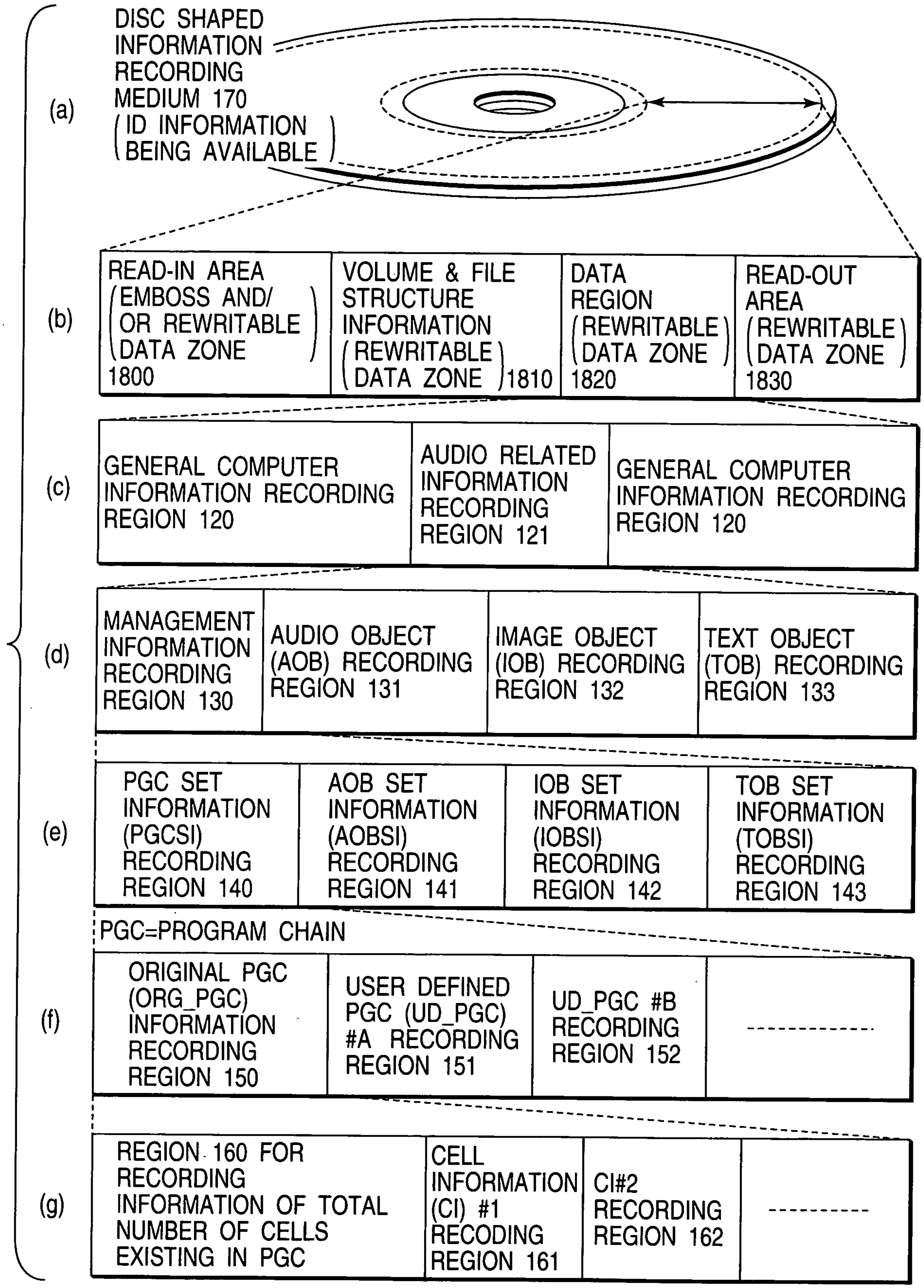

(a)
PREVIOUS AUDIO OBJECT (PRECEDING TRACK)
MUSIC #α • 401 (BEFORE DIVIDING)
CELL INFO. CI #1 • 161
AOBI #1 • 171
TEXT POINTER INFO. TPI#1 • 421
IPI #1 • 191
DISPLAY MODE INFO. DISPLAY SEQUENCE: <1>
TEXT INFO.
DISPLAY MODE INFO.
(b)
ATS_01. AOB 221
REPRESENTATIVE IMAGE IMG_02. IOB 232 OF MUSIC #α
NEWLY CREATED AUDIO OBJECT (NEW TRACK)
NEWLY CREATED AUDIO OBJECT (NEW TRACK)
(c)
MUSIC #α • 401 (AFTER DIVIDING)
CELL INFO. CI #1 • 161
AOBI #1 • 171
TPI #1 • 421
IPI #1 • 191 DISPLAY SEQUENCE: <1>
MUSIC #ζ • 406 (AFTER DIVIDING)
CELL INFO. CI #8 • 155
AOBI #8 • 178
TPI #8 • 428 (=MAY BE TPI#1)
IPI #8 • 208 (=MAY BE IPI#1) DISPLAY SEQUENCE: <1>
(d)
ATS_01. AOB 221
ATS_08. AOB 228
REPRESENTATIVE IMAGE IMG_02. IOB 232 OF MUSIC #α AND MUSIC #ζ

FIG. 4


AUDIO CARD (MEMORY CARD) 100 WITH COPY PROTECT FUNCTION
(a)
CARD INTERNAL CONTROL CPU/MPU 101
ROM 102 FOR RECORDING CONTROL PROGRAMS RELATED TO AUTHENTICATION/KEY EXCHANGE & I/O PROCESSING
CARD SPECIFIC ID & KEY INFORMATION RECORDING REGION (RAM) 103
APPLICATION DATA RECORDING REGION (RAM) 104
(b)
BOOT INFORMATION REGION 110
FILE ALLOCATION TABLE (FAT) RECORDING REGION 111
ROOT DIRECTORY INTERNAL INFORMATION RECORDING REGION 112
DATA REGION 113
(c)
GENERAL COMPUTER INFORMATION RECORDING REGION 120
AUDIO RELATED INFORMATION RECORDING REGION 121
GENERAL COMPUTER INFORMATION RECORDING REGION 120
(d)
MANAGEMENT INFORMATION RECORDING REGION 130
AUDIO OBJECT (AOB) RECORDING REGION 131
IMAGE OBJECT (IOB) RECORDING REGION 132
TEXT OBJECT (TOB) RECORDING REGION 133
(e)
PGC SET INFORMATION (PGCSI) RECORDING REGION 140
AOB SET INFORMATION (AOBSI) RECORDING REGION 141
IOB SET INFORMATION (IOBSI) RECORDING REGION 142
TOB SET INFORMATION (TOBSI) RECORDING REGION 143
PGC=PROGRAM CHAIN
(f)
ORIGINAL PGC (ORG_PGC) INFORMATION RECORDING REGION 150
USER DEFINED PGC (UD_PGC) #A RECORDING REGION 151
UD_PGC #B RECORDING REGION 152

(g)
REGION 160 FOR RECORDING INFORMATION OF TOTAL NUMBER OF CELLS EXISTING IN PGC
CELL INFORMATION (CI) #1 RECODING REGION 161
CI#2 RECORDING REGION 162

FIG. 5


(a)
DISC SHAPED INFORMATION RECORDING MEDIUM 170
(ID INFORMATION BEING AVAILABLE)
(b)
READ-IN AREA (EMBOSS AND/ OR REWRITABLE DATA ZONE) 1800
VOLUME & FILE STRUCTURE INFORMATION (REWRITABLE DATA ZONE) 1810
DATA REGION (REWRITABLE DATA ZONE) 1820
READ-OUT AREA (REWRITABLE DATA ZONE) 1830
(c)
GENERAL COMPUTER INFORMATION RECORDING REGION 120
AUDIO RELATED INFORMATION RECORDING REGION 121
GENERAL COMPUTER INFORMATION RECORDING REGION 120
(d)
MANAGEMENT INFORMATION RECORDING REGION 130
AUDIO OBJECT (AOB) RECORDING REGION 131
IMAGE OBJECT (IOB) RECORDING REGION 132
TEXT OBJECT (TOB) RECORDING REGION 133
(e)
PGC SET INFORMATION (PGCSI) RECORDING REGION 140
AOB SET INFORMATION (AOBSI) RECORDING REGION 141
IOB SET INFORMATION (IOBSI) RECORDING REGION 142
TOB SET INFORMATION (TOBSI) RECORDING REGION 143
PGC=PROGRAM CHAIN
(f)
ORIGINAL PGC (ORG_PGC) INFORMATION RECORDING REGION 150
USER DEFINED PGC (UD_PGC) #A RECORDING REGION 151
UD_PGC #B RECORDING REGION 152

(g)
REGION 160 FOR RECORDING INFORMATION OF TOTAL NUMBER OF CELLS EXISTING IN PGC
CELL INFORMATION (CI) #1 RECODING REGION 161
CI#2 RECORDING REGION 162

FIG. 6

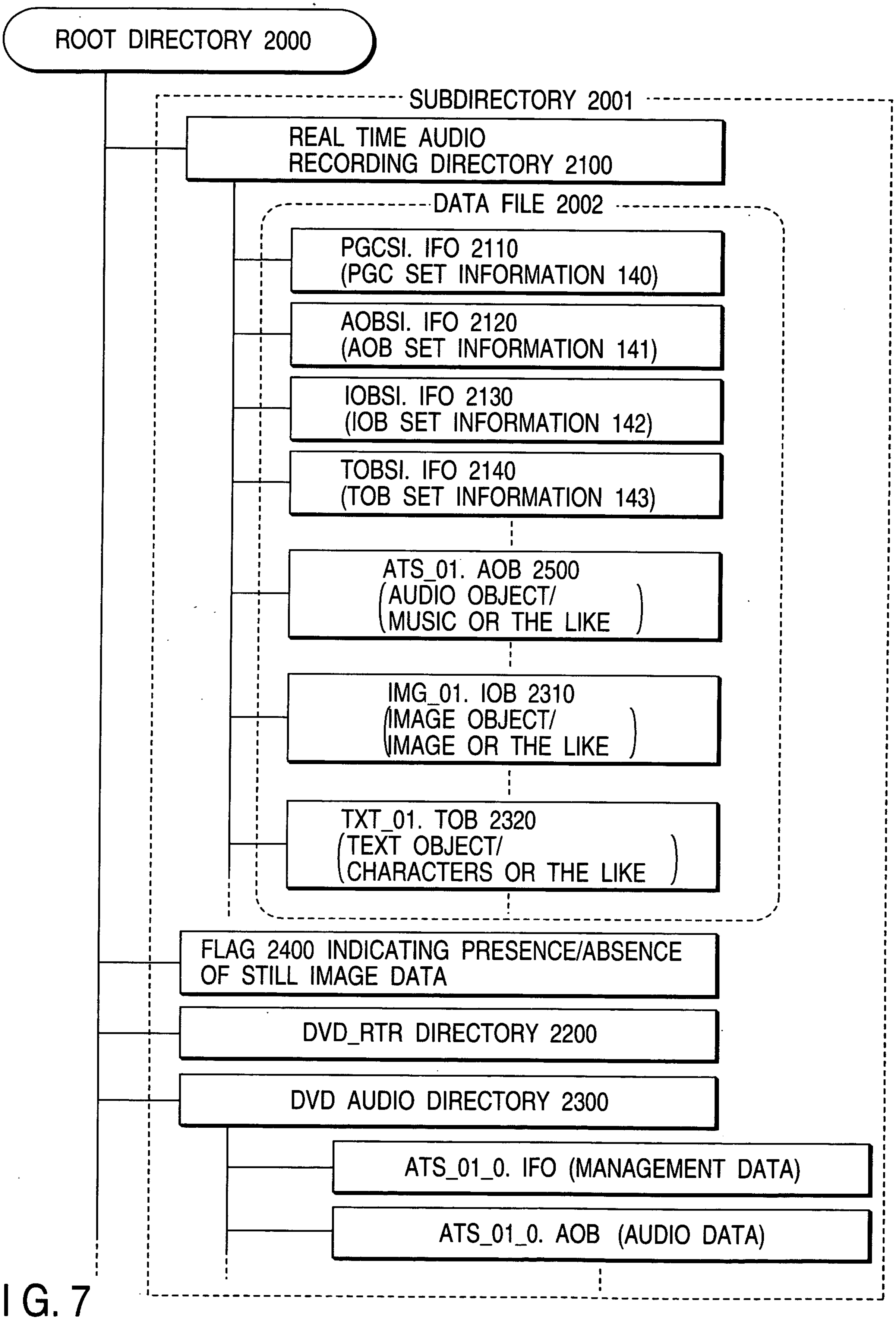

ROOT DIRECTORY 2000
SUBDIRECTORY 2001
REAL TIME AUDIO RECORDING DIRECTORY 2100
DATA FILE 2002
PGCSI. IFO 2110 (PGC SET INFORMATION 140)
AOBSI. IFO 2120 (AOB SET INFORMATION 141)
IOBSI. IFO 2130 (IOB SET INFORMATION 142)
TOBSI. IFO 2140 (TOB SET INFORMATION 143)
ATS_01. AOB 2500 (AUDIO OBJECT/ MUSIC OR THE LIKE)
IMG_01. IOB 2310 (IMAGE OBJECT/ IMAGE OR THE LIKE)
TXT_01. TOB 2320 (TEXT OBJECT/ CHARACTERS OR THE LIKE)
FLAG 2400 INDICATING PRESENCE/ABSENCE OF STILL IMAGE DATA
DVD_RTR DIRECTORY 2200
DVD AUDIO DIRECTORY 2300
ATS_01_0. IFO (MANAGEMENT DATA)
ATS_01_0. AOB (AUDIO DATA)

FIG. 7

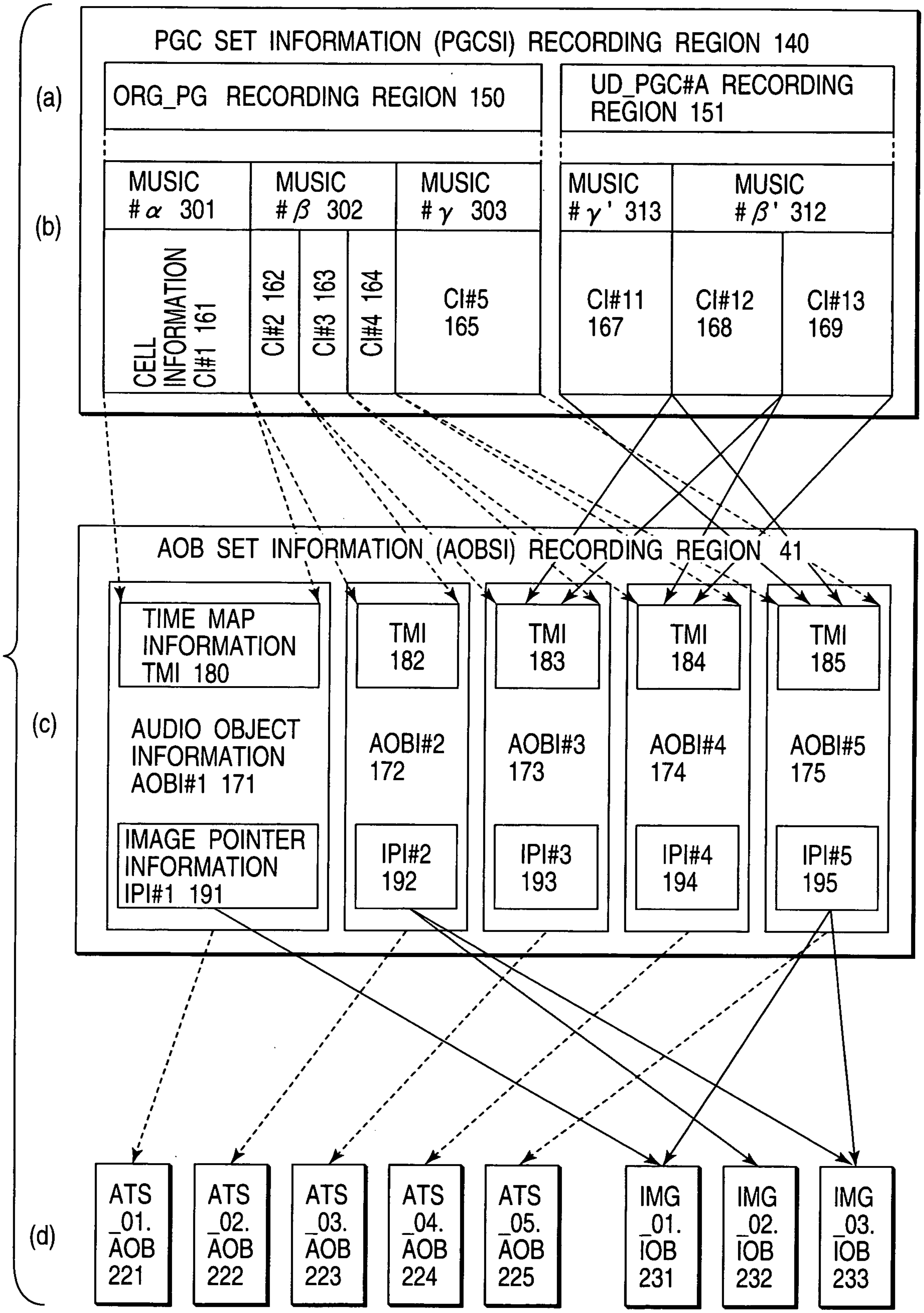

(a)
PGC SET INFORMATION (PGCSI) RECORDING REGION 140
ORG_PG RECORDING REGION 150
UD_PGC#A RECORDING REGION 151
(b)
MUSIC #α 301
MUSIC #β 302
MUSIC #γ 303
MUSIC #γ' 313
MUSIC #β' 312
CELL INFORMATION CI#1 161
CI#2 162
CI#3 163
CI#4 164
CI#5 165
CI#11 167
CI#12 168
CI#13 169
(c)
AOB SET INFORMATION (AOBSI) RECORDING REGION 41
TIME MAP INFORMATION TMI 180
AUDIO OBJECT INFORMATION AOBI#1 171
IMAGE POINTER INFORMATION IPI#1 191
TMI 182
AOBI#2 172
IPI#2 192
TMI 183
AOBI#3 173
IPI#3 193
TMI 184
AOBI#4 174
IPI#4 194
TMI 185
AOBI#5 175
IPI#5 195
(d)
ATS_01.AOB 221
ATS_02.AOB 222
ATS_03.AOB 223
ATS_04.AOB 224
ATS_05.AOB 225
IMG_01.IOB 231
IMG_02.IOB 232
IMG_03.IOB 233

FIG. 8

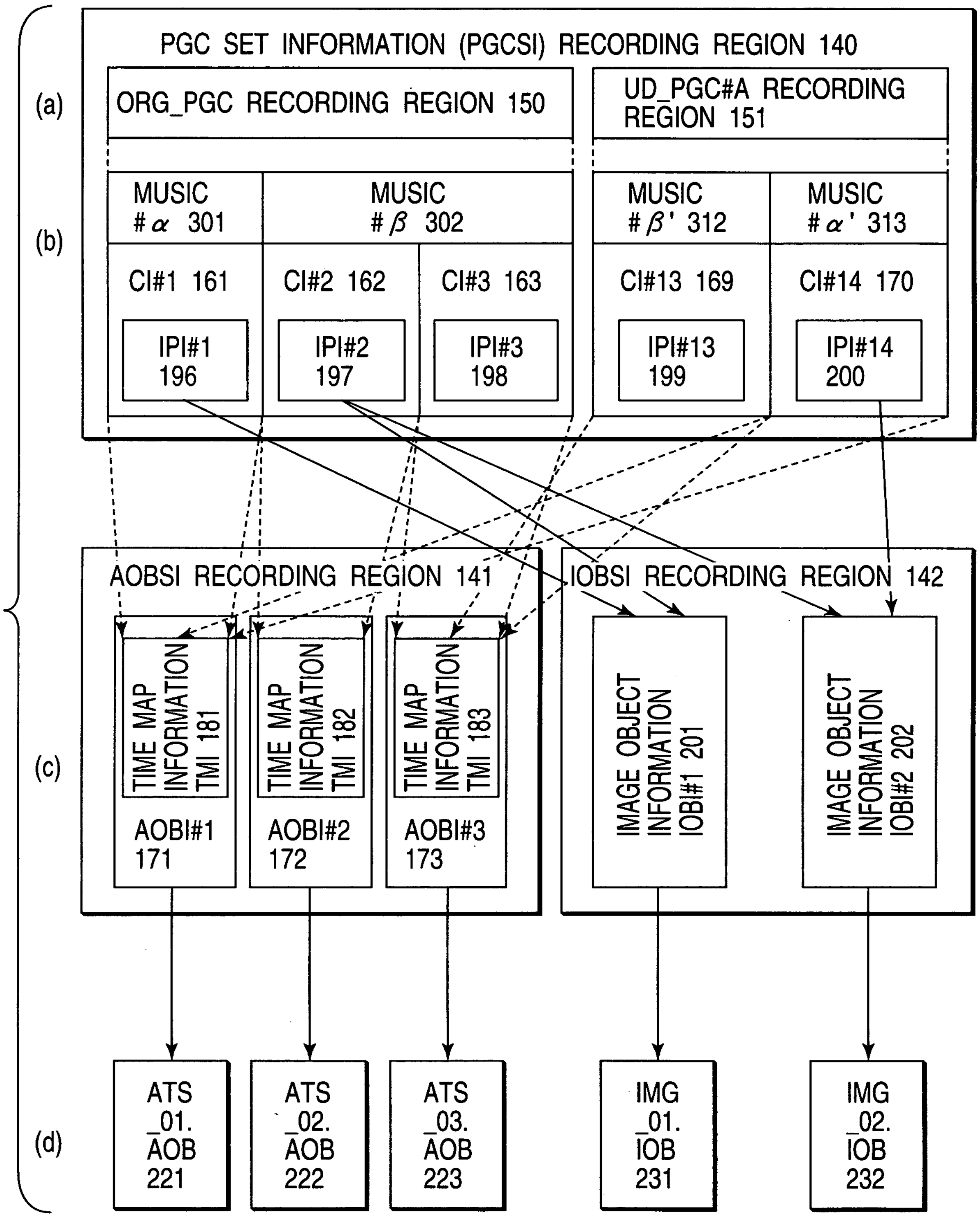

PGC SET INFORMATION (PGCSI) RECORDING REGION 140
(a)
ORG_PGC RECORDING REGION 150
UD_PGC#A RECORDING REGION 151
(b)
MUSIC #α 301
MUSIC #β 302
MUSIC #β' 312
MUSIC #α' 313
CI#1 161
CI#2 162
CI#3 163
CI#13 169
CI#14 170
IPI#1 196
IPI#2 197
IPI#3 198
IPI#13 199
IPI#14 200
AOBSI RECORDING REGION 141
IOBSI RECORDING REGION 142
(c)
TIME MAP INFORMATION TMI 181
TIME MAP INFORMATION TMI 182
TIME MAP INFORMATION TMI 183
AOBI#1 171
AOBI#2 172
AOBI#3 173
IMAGE OBJECT INFORMATION IOBI#1 201
IMAGE OBJECT INFORMATION IOBI#2 202
(d)
ATS _01. AOB 221
ATS _02. AOB 222
ATS _03. AOB 223
IMG _01. IOB 231
IMG _02. IOB 232

FIG. 9

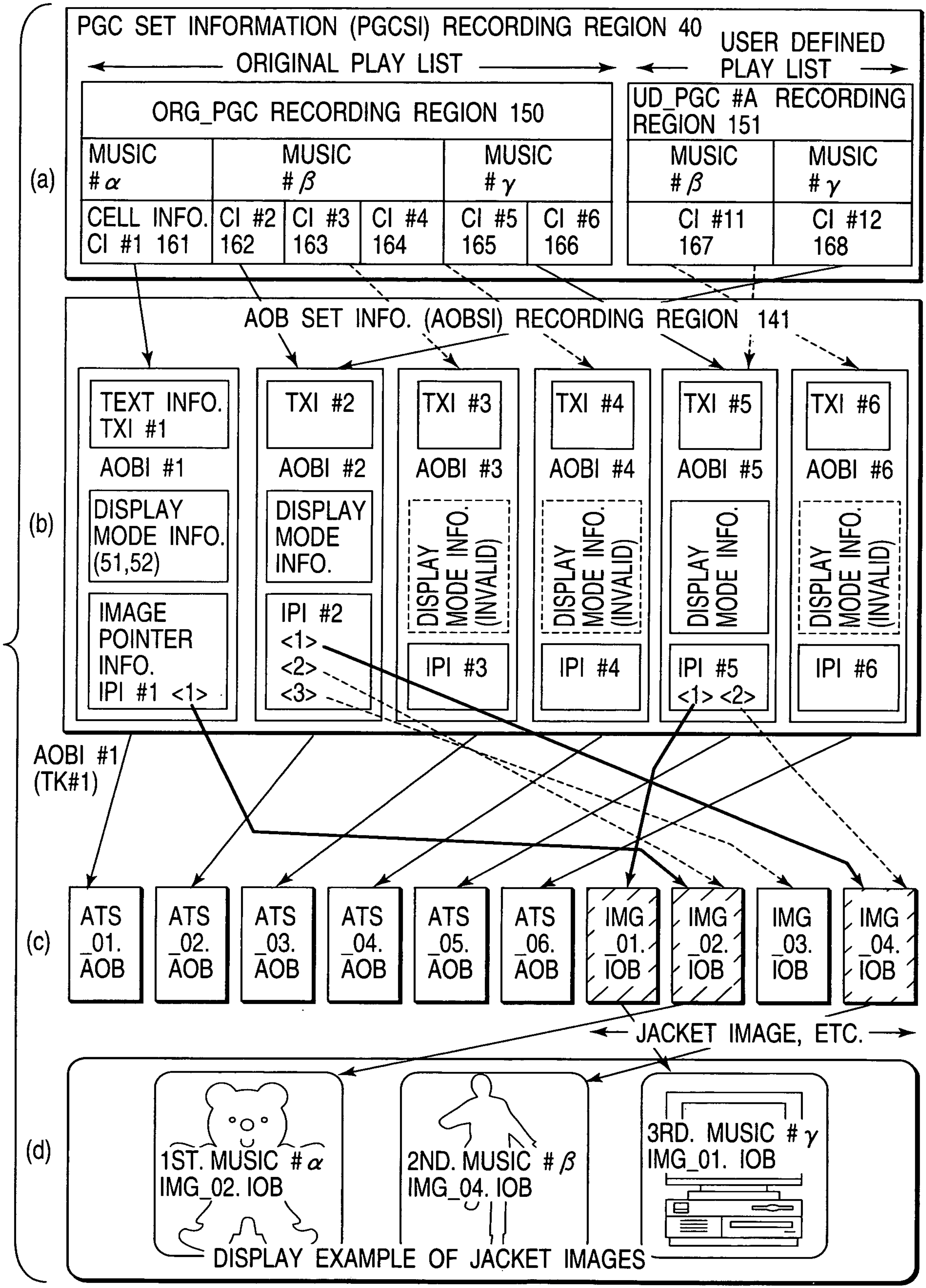

PGC SET INFORMATION (PGCSI) RECORDING REGION 40
ORIGINAL PLAY LIST
USER DEFINED PLAY LIST
ORG_PGC RECORDING REGION 150
UD_PGC #A RECORDING REGION 151
MUSIC #α
MUSIC #β
MUSIC #γ
MUSIC #β
MUSIC #γ
CELL INFO. CI #1 161
CI #2 162
CI #3 163
CI #4 164
CI #5 165
CI #6 166
CI #11 167
CI #12 168
(a)
AOB SET INFO. (AOBSI) RECORDING REGION 141
TEXT INFO. TXI #1
TXI #2
TXI #3
TXI #4
TXI #5
TXI #6
AOBI #1
AOBI #2
AOBI #3
AOBI #4
AOBI #5
AOBI #6
DISPLAY MODE INFO. (51,52)
DISPLAY MODE INFO.
DISPLAY MODE INFO. (INVALID)
DISPLAY MODE INFO. (INVALID)
DISPLAY MODE INFO.
DISPLAY MODE INFO. (INVALID)
IMAGE POINTER INFO. IPI #1 <1>
IPI #2 <1> <2> <3>
IPI #3
IPI #4
IPI #5 <1> <2>
IPI #6
(b)
AOBI #1 (TK#1)
ATS_01. AOB
ATS_02. AOB
ATS_03. AOB
ATS_04. AOB
ATS_05. AOB
ATS_06. AOB
IMG_01. IOB
IMG_02. IOB
IMG_03. IOB
IMG_04. IOB
(c)
JACKET IMAGE, ETC.
1ST. MUSIC #α IMG_02. IOB
2ND. MUSIC #β IMG_04. IOB
3RD. MUSIC #γ IMG_01. IOB
DISPLAY EXAMPLE OF JACKET IMAGES
(d)

FIG. 10

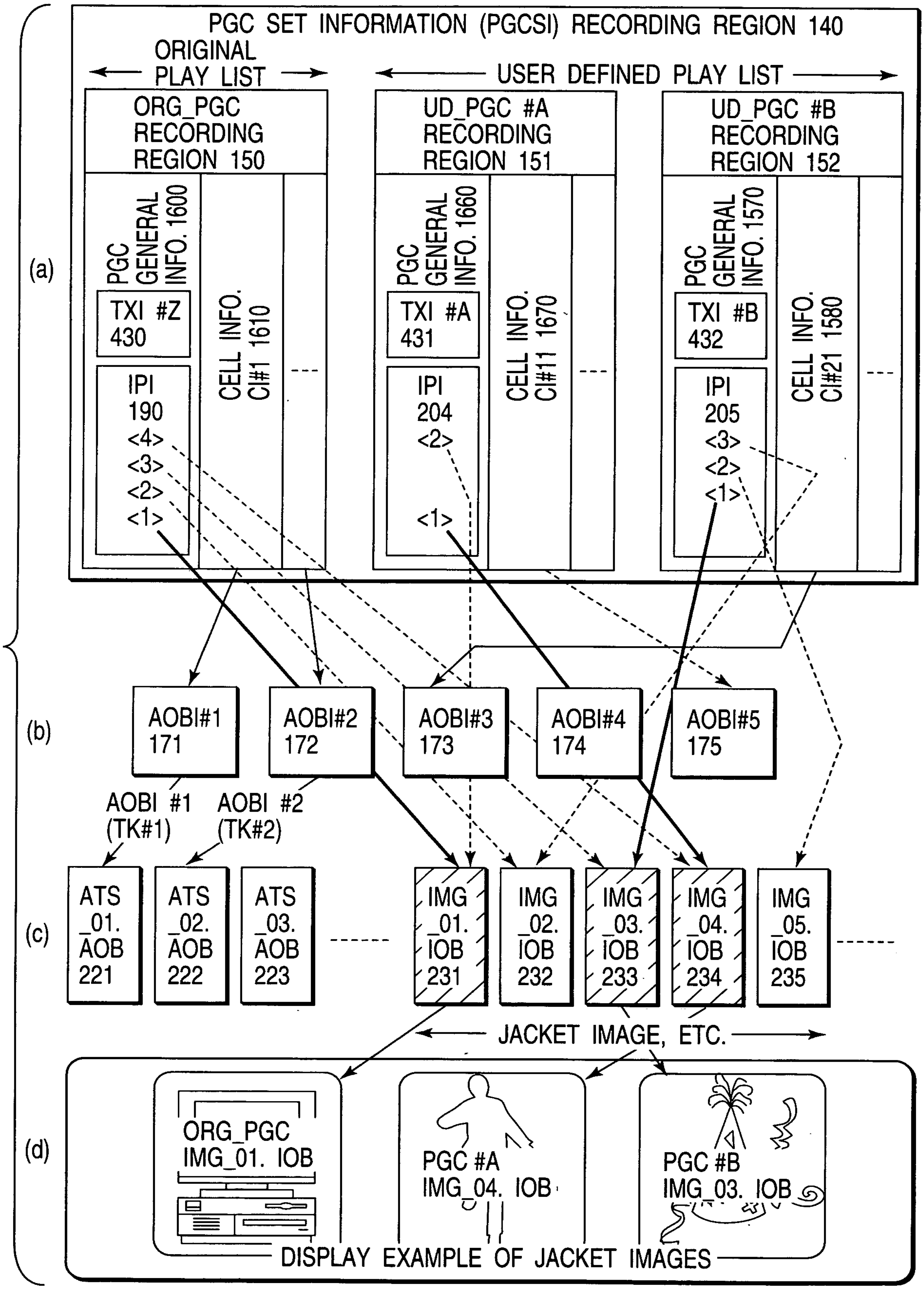

PGC SET INFORMATION (PGCSI) RECORDING REGION 140
ORIGINAL PLAY LIST
USER DEFINED PLAY LIST
ORG_PGC RECORDING REGION 150
UD_PGC #A RECORDING REGION 151
UD_PGC #B RECORDING REGION 152
PGC GENERAL INFO. 1600
PGC GENERAL INFO. 1660
PGC GENERAL INFO. 1570
TXI #Z 430
TXI #A 431
TXI #B 432
IPI 190 <4> <3> <2> <1>
IPI 204 <2> <1>
IPI 205 <3> <2> <1>
CELL INFO. CI#1 1610
CELL INFO. CI#11 1670
CELL INFO. CI#21 1580
(a)
(b)
(c)
(d)
AOBI#1 171
AOBI#2 172
AOBI#3 173
AOBI#4 174
AOBI#5 175
AOBI #1 (TK#1)
AOBI #2 (TK#2)
ATS _01. AOB 221
ATS _02. AOB 222
ATS _03. AOB 223
IMG _01. IOB 231
IMG _02. IOB 232
IMG _03. IOB 233
IMG _04. IOB 234
IMG _05. IOB 235
JACKET IMAGE, ETC.
ORG_PGC IMG_01. IOB
PGC #A IMG_04. IOB
PGC #B IMG_03. IOB
DISPLAY EXAMPLE OF JACKET IMAGES

FIG. 11

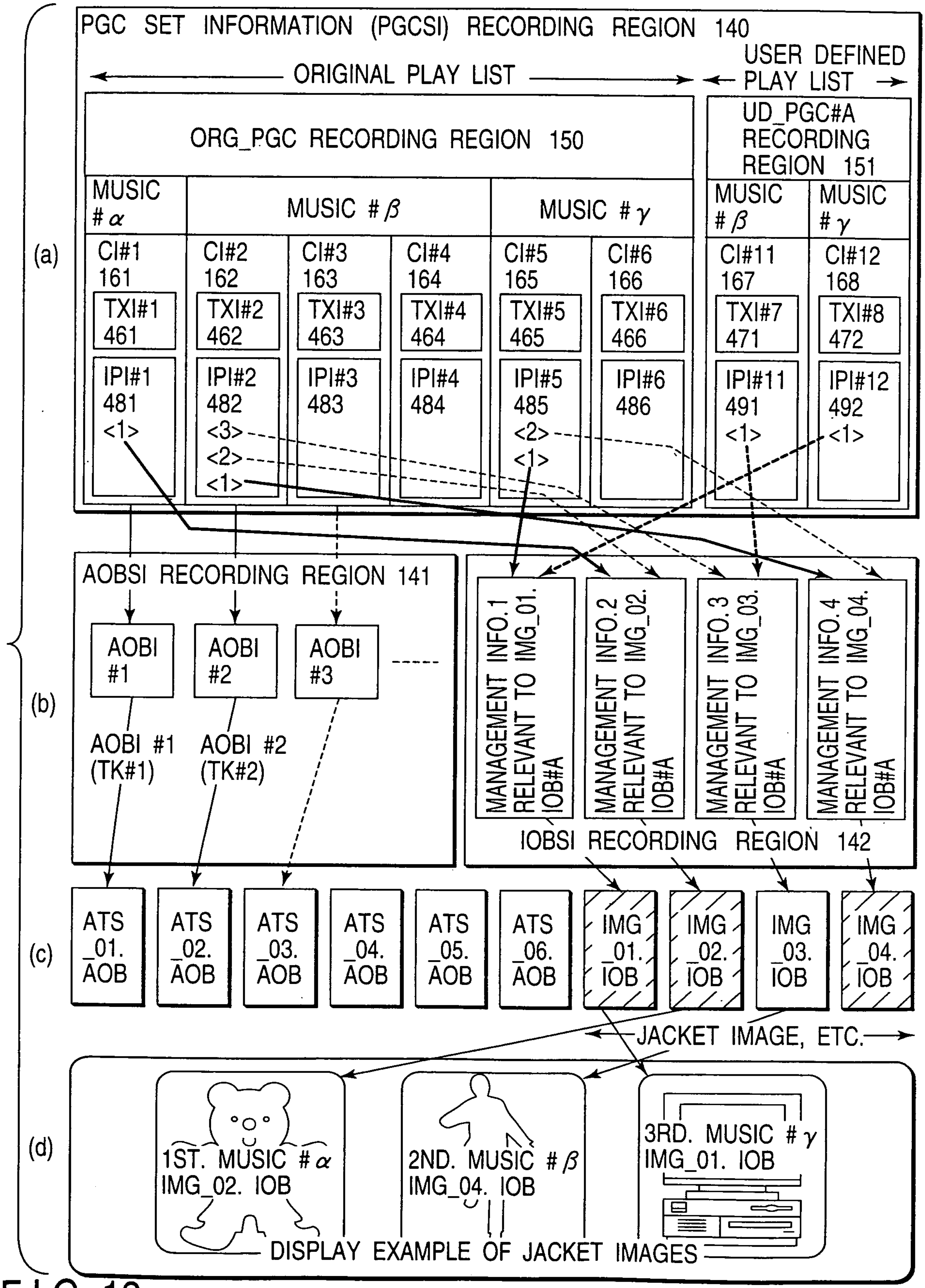

(a)
PGC SET INFORMATION (PGCSI) RECORDING REGION 140
ORIGINAL PLAY LIST
USER DEFINED PLAY LIST
ORG_PGC RECORDING REGION 150
UD_PGC#A RECORDING REGION 151
MUSIC #α
MUSIC #β
MUSIC #γ
MUSIC #β
MUSIC #γ
CI#1 161
CI#2 162
CI#3 163
CI#4 164
CI#5 165
CI#6 166
CI#11 167
CI#12 168
TXI#1 461
TXI#2 462
TXI#3 463
TXI#4 464
TXI#5 465
TXI#6 466
TXI#7 471
TXI#8 472
IPI#1 481 <1>
IPI#2 482 <3> <2> <1>
IPI#3 483
IPI#4 484
IPI#5 485 <2> <1>
IPI#6 486
IPI#11 491 <1>
IPI#12 492 <1>
(b)
AOBSI RECORDING REGION 141
AOBI #1
AOBI #2
AOBI #3
AOBI #1 (TK#1)
AOBI #2 (TK#2)
MANAGEMENT INFO.1 RELEVANT TO IMG_01. IOB#A
MANAGEMENT INFO.2 RELEVANT TO IMG_02. IOB#A
MANAGEMENT INFO.3 RELEVANT TO IMG_03. IOB#A
MANAGEMENT INFO.4 RELEVANT TO IMG_04. IOB#A
IOBSI RECORDING REGION 142
(c)
ATS _01. AOB
ATS _02. AOB
ATS _03. AOB
ATS _04. AOB
ATS _05. AOB
ATS _06. AOB
IMG _01. IOB
IMG _02. IOB
IMG _03. IOB
IMG _04. IOB
JACKET IMAGE, ETC.
(d)
1ST. MUSIC #α IMG_02. IOB
2ND. MUSIC #β IMG_04. IOB
3RD. MUSIC #γ IMG_01. IOB
DISPLAY EXAMPLE OF JACKET IMAGES

FIG. 12

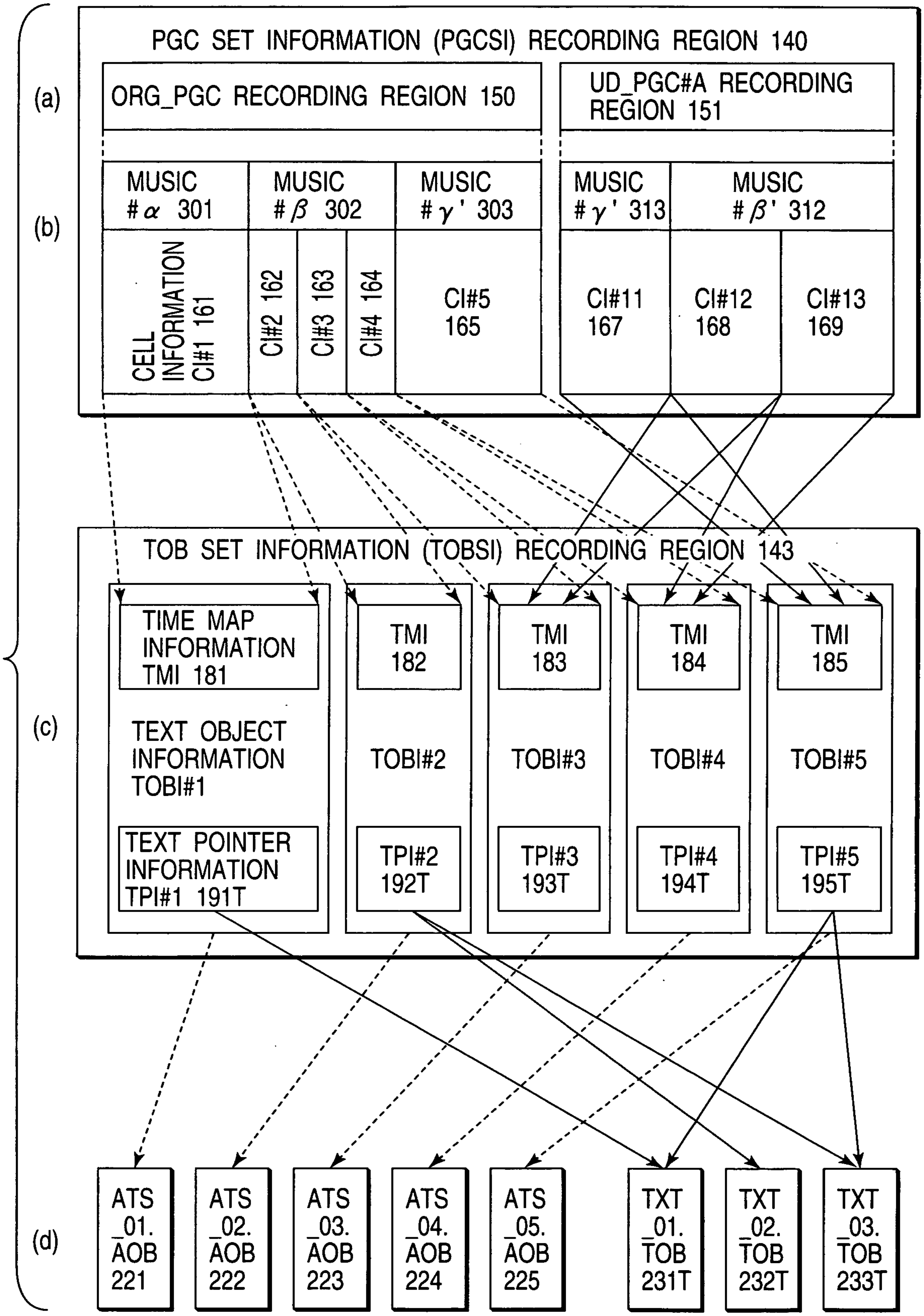
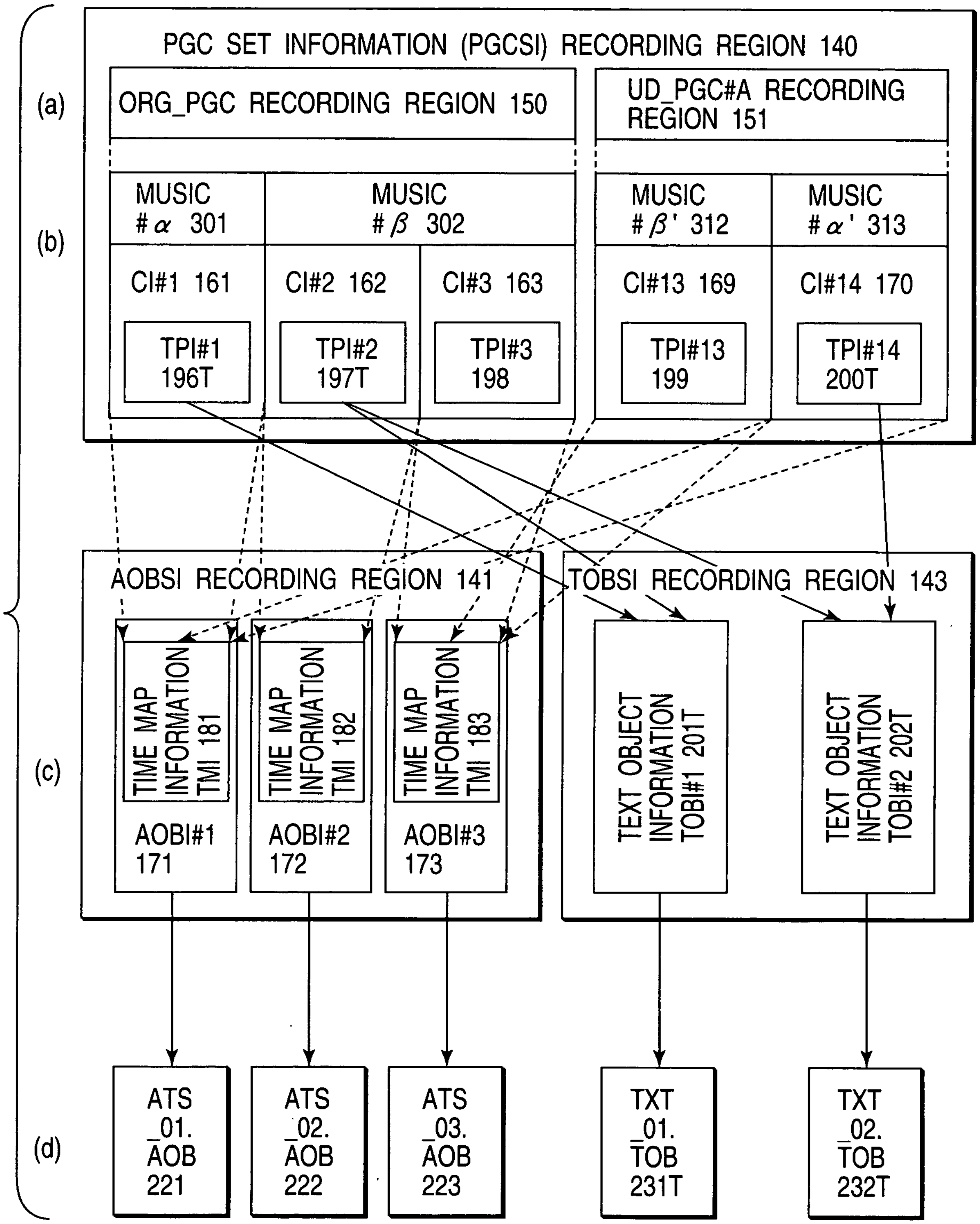

(a)
(b)
(c)
(d)
PGC SET INFORMATION (PGCSI) RECORDING REGION 140
ORG_PGC RECORDING REGION 150
UD_PGC#A RECORDING REGION 151
MUSIC #α 301
MUSIC #β 302
MUSIC #γ' 303
MUSIC #γ' 313
MUSIC #β' 312
CELL INFORMATION CI#1 161
CI#2 162
CI#3 163
CI#4 164
CI#5 165
CI#11 167
CI#12 168
CI#13 169
TOB SET INFORMATION (TOBSI) RECORDING REGION 143
TIME MAP INFORMATION TMI 181
TEXT OBJECT INFORMATION TOBI#1
TEXT POINTER INFORMATION TPI#1 191T
TMI 182
TOBI#2
TPI#2 192T
TMI 183
TOBI#3
TPI#3 193T
TMI 184
TOBI#4
TPI#4 194T
TMI 185
TOBI#5
TPI#5 195T
ATS_01.AOB 221
ATS_02.AOB 222
ATS_03.AOB 223
ATS_04.AOB 224
ATS_05.AOB 225
TXT_01.TOB 231T
TXT_02.TOB 232T
TXT_03.TOB 233T

FIG. 13


PGC SET INFORMATION (PGCSI) RECORDING REGION 140
(a)
ORG_PGC RECORDING REGION 150
UD_PGC#A RECORDING REGION 151
(b)
MUSIC #α 301
MUSIC #β 302
MUSIC #β' 312
MUSIC #α' 313
CI#1 161
CI#2 162
CI#3 163
CI#13 169
CI#14 170
TPI#1 196T
TPI#2 197T
TPI#3 198
TPI#13 199
TPI#14 200T
AOBSI RECORDING REGION 141
TOBSI RECORDING REGION 143
(c)
TIME MAP INFORMATION TMI 181
TIME MAP INFORMATION TMI 182
TIME MAP INFORMATION TMI 183
AOBI#1 171
AOBI#2 172
AOBI#3 173
TEXT OBJECT INFORMATION TOBI#1 201T
TEXT OBJECT INFORMATION TOBI#2 202T
(d)
ATS _01. AOB 221
ATS _02. AOB 222
ATS _03. AOB 223
TXT _01. TOB 231T
TXT _02. TOB 232T

F I G. 14

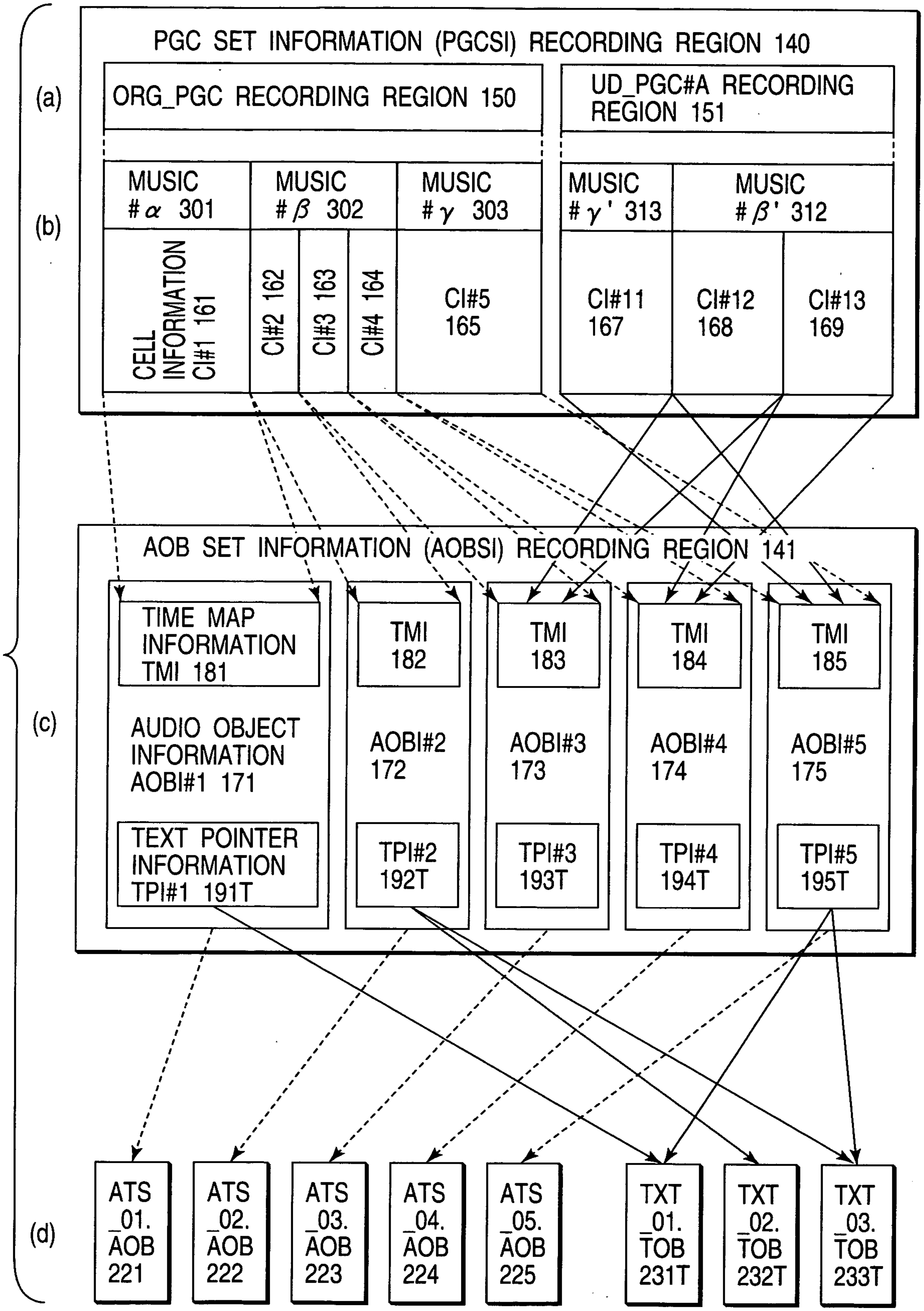

(a)
(b)
(c)
(d)
PGC SET INFORMATION (PGCSI) RECORDING REGION 140
ORG_PGC RECORDING REGION 150
UD_PGC#A RECORDING REGION 151
MUSIC #α 301
MUSIC #β 302
MUSIC #γ 303
MUSIC #γ' 313
MUSIC #β' 312
CELL INFORMATION CI#1 161
CI#2 162
CI#3 163
CI#4 164
CI#5 165
CI#11 167
CI#12 168
CI#13 169
AOB SET INFORMATION (AOBSI) RECORDING REGION 141
TIME MAP INFORMATION TMI 181
AUDIO OBJECT INFORMATION AOBI#1 171
TEXT POINTER INFORMATION TPI#1 191T
TMI 182
AOBI#2 172
TPI#2 192T
TMI 183
AOBI#3 173
TPI#3 193T
TMI 184
AOBI#4 174
TPI#4 194T
TMI 185
AOBI#5 175
TPI#5 195T
ATS_01. AOB 221
ATS_02. AOB 222
ATS_03. AOB 223
ATS_04. AOB 224
ATS_05. AOB 225
TXT_01. TOB 231T
TXT_02. TOB 232T
TXT_03. TOB 233T

FIG. 15

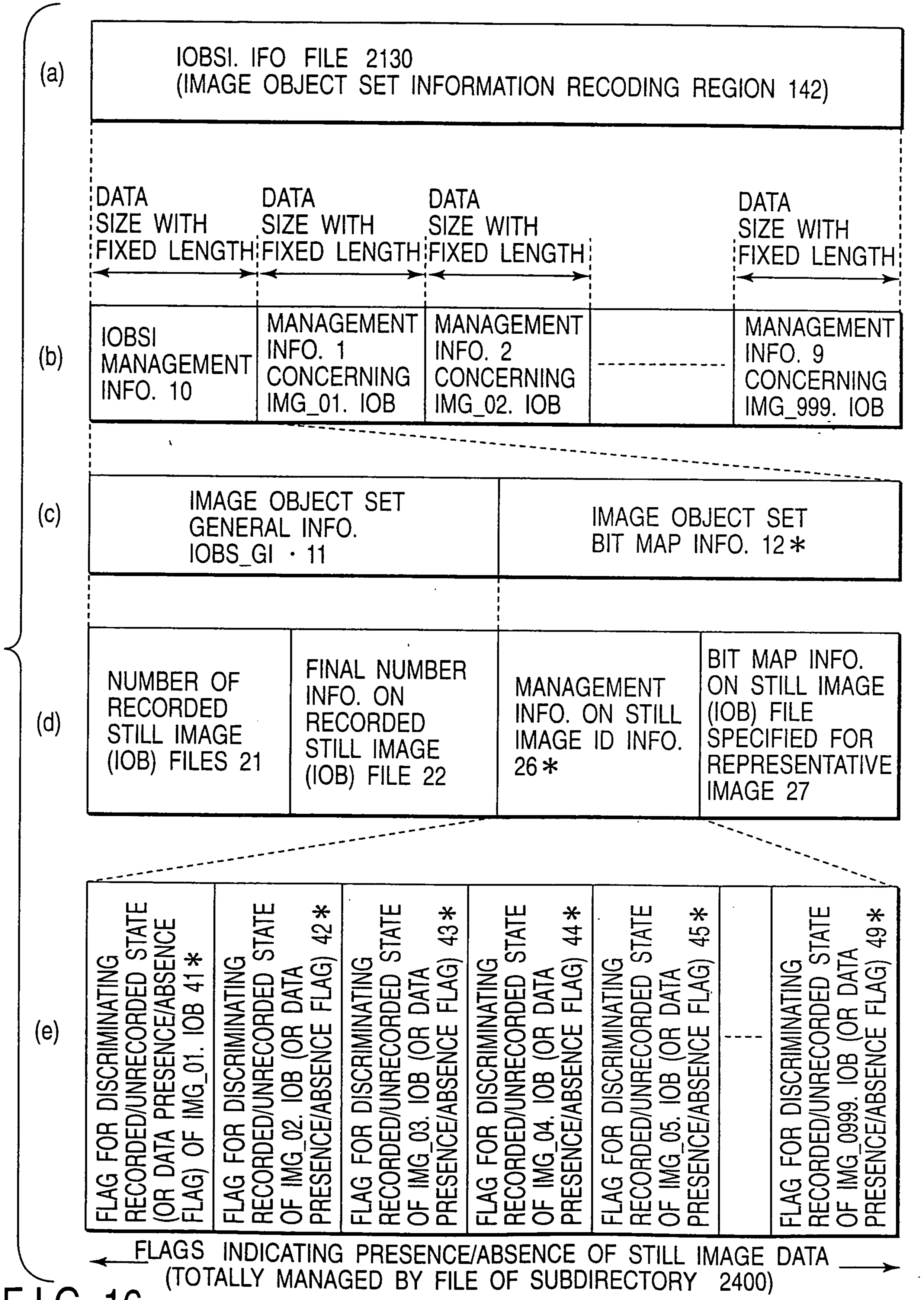
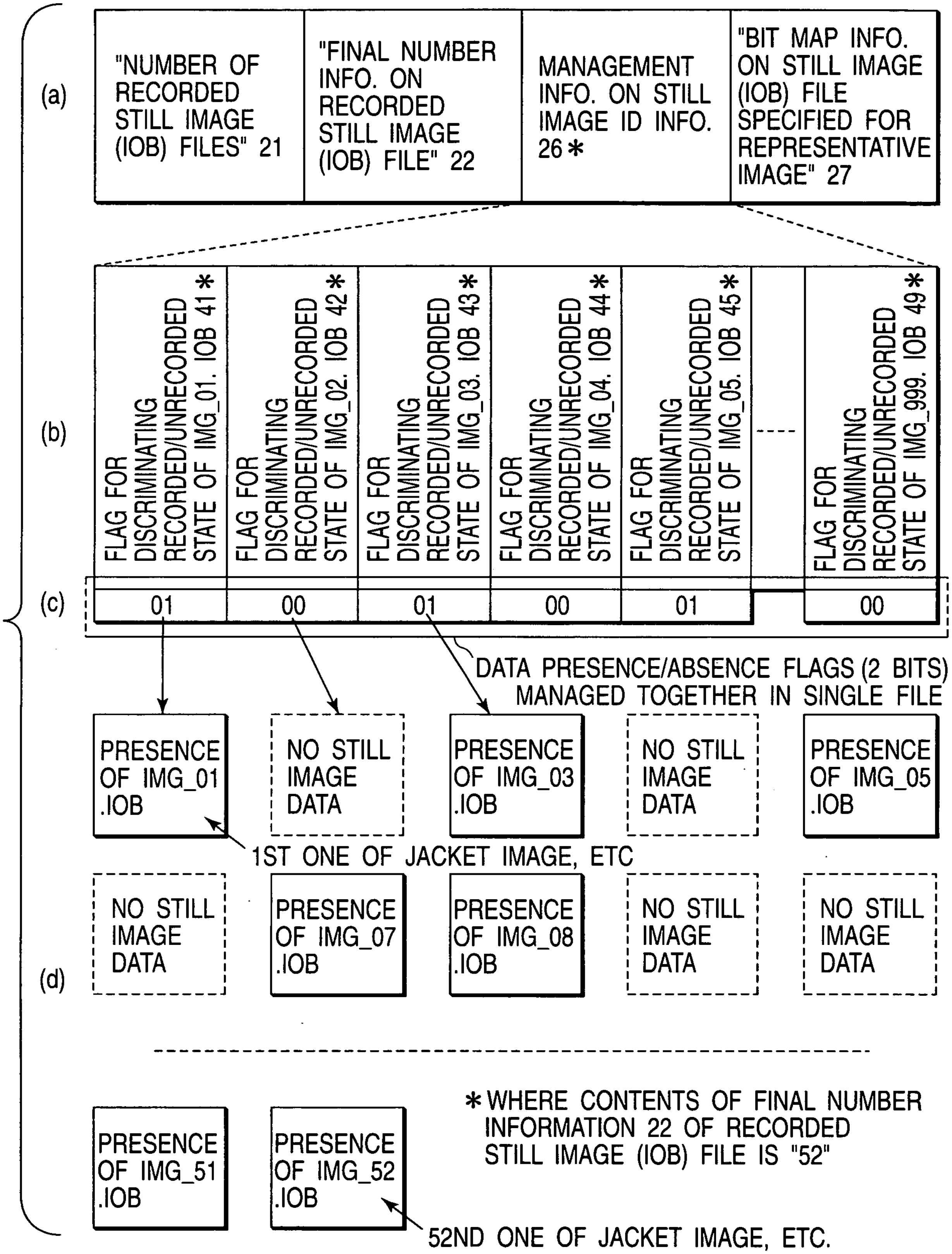

(a)
IOBSI. IFO FILE 2130
(IMAGE OBJECT SET INFORMATION RECODING REGION 142)
DATA SIZE WITH FIXED LENGTH
DATA SIZE WITH FIXED LENGTH
DATA SIZE WITH FIXED LENGTH
DATA SIZE WITH FIXED LENGTH
(b)
IOBSI MANAGEMENT INFO. 10
MANAGEMENT INFO. 1 CONCERNING IMG_01. IOB
MANAGEMENT INFO. 2 CONCERNING IMG_02. IOB
MANAGEMENT INFO. 9 CONCERNING IMG_999. IOB
(c)
IMAGE OBJECT SET GENERAL INFO. IOBS_GI · 11
IMAGE OBJECT SET BIT MAP INFO. 12*
(d)
NUMBER OF RECORDED STILL IMAGE (IOB) FILES 21
FINAL NUMBER INFO. ON RECORDED STILL IMAGE (IOB) FILE 22
MANAGEMENT INFO. ON STILL IMAGE ID INFO. 26*
BIT MAP INFO. ON STILL IMAGE (IOB) FILE SPECIFIED FOR REPRESENTATIVE IMAGE 27
(e)
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE (OR DATA PRESENCE/ABSENCE FLAG) OF IMG_01. IOB 41*
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_02. IOB (OR DATA PRESENCE/ABSENCE FLAG) 42*
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_03. IOB (OR DATA PRESENCE/ABSENCE FLAG) 43*
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_04. IOB (OR DATA PRESENCE/ABSENCE FLAG) 44*
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_05. IOB (OR DATA PRESENCE/ABSENCE FLAG) 45*
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_0999. IOB (OR DATA PRESENCE/ABSENCE FLAG) 49*
FLAGS INDICATING PRESENCE/ABSENCE OF STILL IMAGE DATA
(TOTALLY MANAGED BY FILE OF SUBDIRECTORY 2400)

FIG. 16


(a)
"NUMBER OF RECORDED STILL IMAGE (IOB) FILES" 21
"FINAL NUMBER INFO. ON RECORDED STILL IMAGE (IOB) FILE" 22
MANAGEMENT INFO. ON STILL IMAGE ID INFO. 26 *
"BIT MAP INFO. ON STILL IMAGE (IOB) FILE SPECIFIED FOR REPRESENTATIVE IMAGE" 27
(b)
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_01. IOB 41 *
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_02. IOB 42 *
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_03. IOB 43 *
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_04. IOB 44 *
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_05. IOB 45 *
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_999. IOB 49 *
(c)
01
00
01
00
01
00
DATA PRESENCE/ABSENCE FLAGS (2 BITS) MANAGED TOGETHER IN SINGLE FILE
PRESENCE OF IMG_01 .IOB
NO STILL IMAGE DATA
PRESENCE OF IMG_03 .IOB
NO STILL IMAGE DATA
PRESENCE OF IMG_05 .IOB
1ST ONE OF JACKET IMAGE, ETC
(d)
NO STILL IMAGE DATA
PRESENCE OF IMG_07 .IOB
PRESENCE OF IMG_08 .IOB
NO STILL IMAGE DATA
NO STILL IMAGE DATA
PRESENCE OF IMG_51 .IOB
PRESENCE OF IMG_52 .IOB
* WHERE CONTENTS OF FINAL NUMBER INFORMATION 22 OF RECORDED STILL IMAGE (IOB) FILE IS "52"
52ND ONE OF JACKET IMAGE, ETC.

F I G. 17

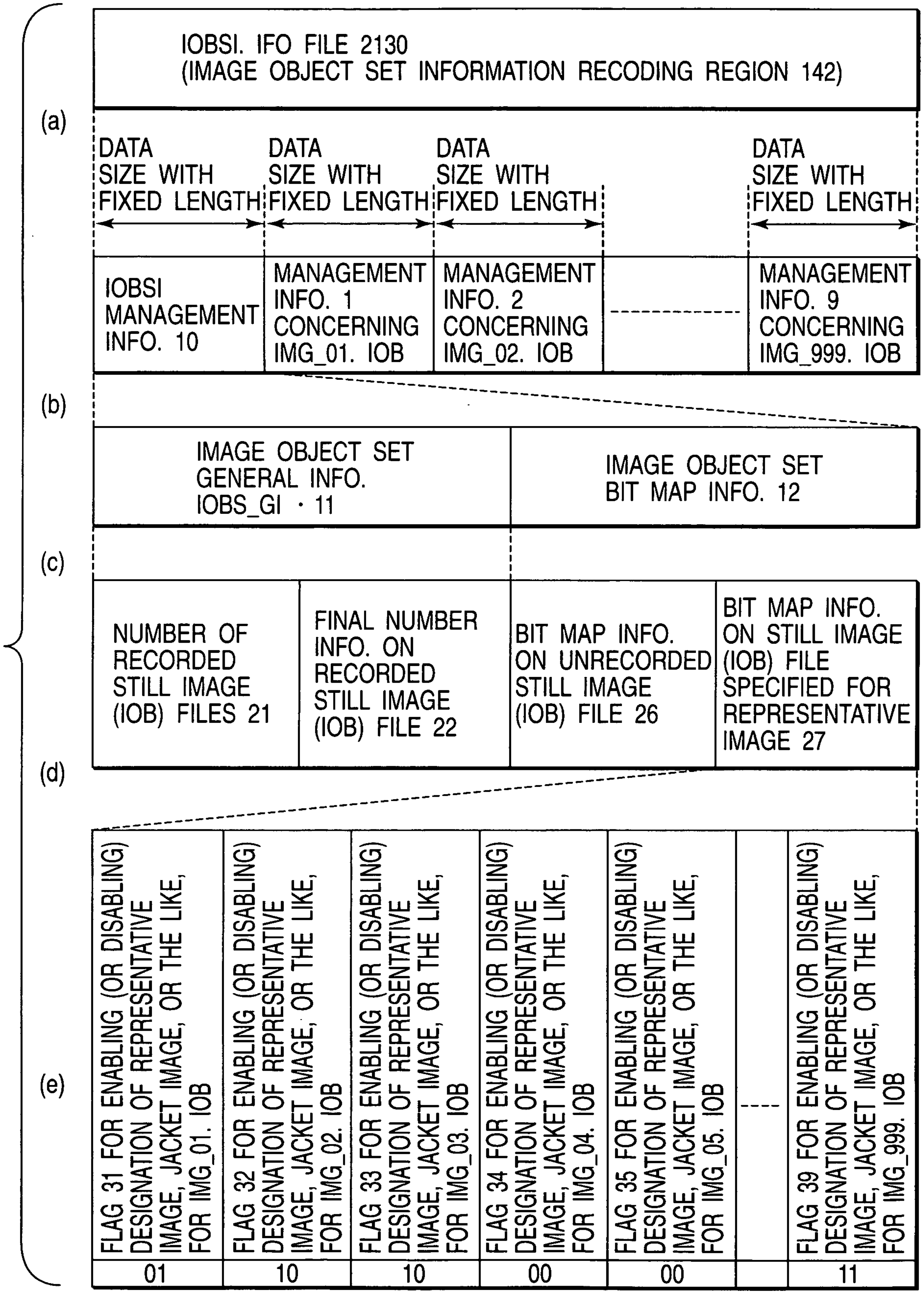

IOBSI. IFO FILE 2130
(IMAGE OBJECT SET INFORMATION RECODING REGION 142)
(a)
DATA SIZE WITH FIXED LENGTH
DATA SIZE WITH FIXED LENGTH
DATA SIZE WITH FIXED LENGTH
DATA SIZE WITH FIXED LENGTH
IOBSI MANAGEMENT INFO. 10
MANAGEMENT INFO. 1 CONCERNING IMG_01. IOB
MANAGEMENT INFO. 2 CONCERNING IMG_02. IOB
MANAGEMENT INFO. 9 CONCERNING IMG_999. IOB
(b)
IMAGE OBJECT SET GENERAL INFO. IOBS_GI · 11
IMAGE OBJECT SET BIT MAP INFO. 12
(c)
NUMBER OF RECORDED STILL IMAGE (IOB) FILES 21
FINAL NUMBER INFO. ON RECORDED STILL IMAGE (IOB) FILE 22
BIT MAP INFO. ON UNRECORDED STILL IMAGE (IOB) FILE 26
BIT MAP INFO. ON STILL IMAGE (IOB) FILE SPECIFIED FOR REPRESENTATIVE IMAGE 27
(d)
(e)
FLAG 31 FOR ENABLING (OR DISABLING) DESIGNATION OF REPRESENTATIVE IMAGE, JACKET IMAGE, OR THE LIKE, FOR IMG_01. IOB
FLAG 32 FOR ENABLING (OR DISABLING) DESIGNATION OF REPRESENTATIVE IMAGE, JACKET IMAGE, OR THE LIKE, FOR IMG_02. IOB
FLAG 33 FOR ENABLING (OR DISABLING) DESIGNATION OF REPRESENTATIVE IMAGE, JACKET IMAGE, OR THE LIKE, FOR IMG_03. IOB
FLAG 34 FOR ENABLING (OR DISABLING) DESIGNATION OF REPRESENTATIVE IMAGE, JACKET IMAGE, OR THE LIKE, FOR IMG_04. IOB
FLAG 35 FOR ENABLING (OR DISABLING) DESIGNATION OF REPRESENTATIVE IMAGE, JACKET IMAGE, OR THE LIKE, FOR IMG_05. IOB
FLAG 39 FOR ENABLING (OR DISABLING) DESIGNATION OF REPRESENTATIVE IMAGE, JACKET IMAGE, OR THE LIKE, FOR IMG_999. IOB
01
10
10
00
00
11

FIG. 18

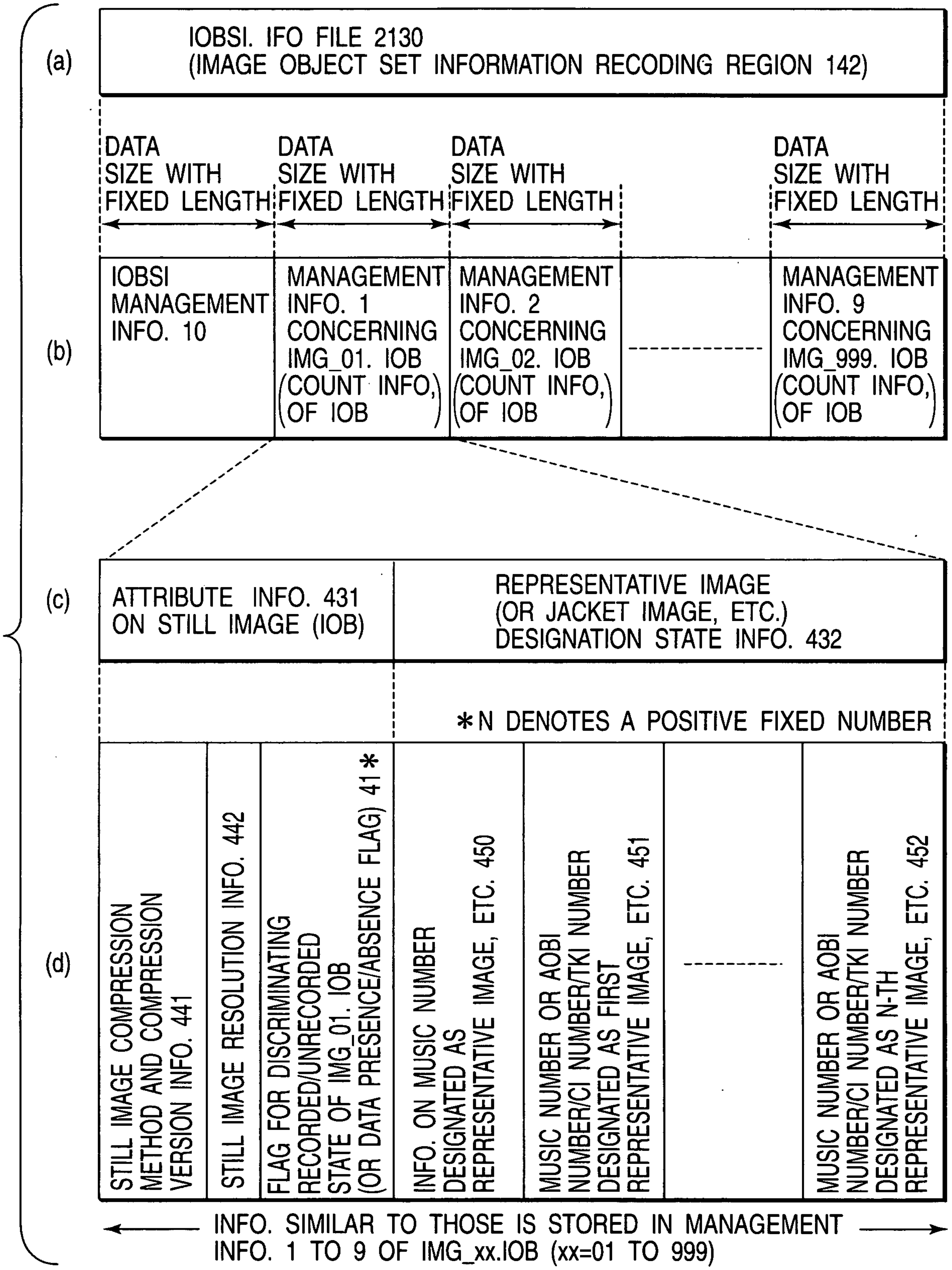
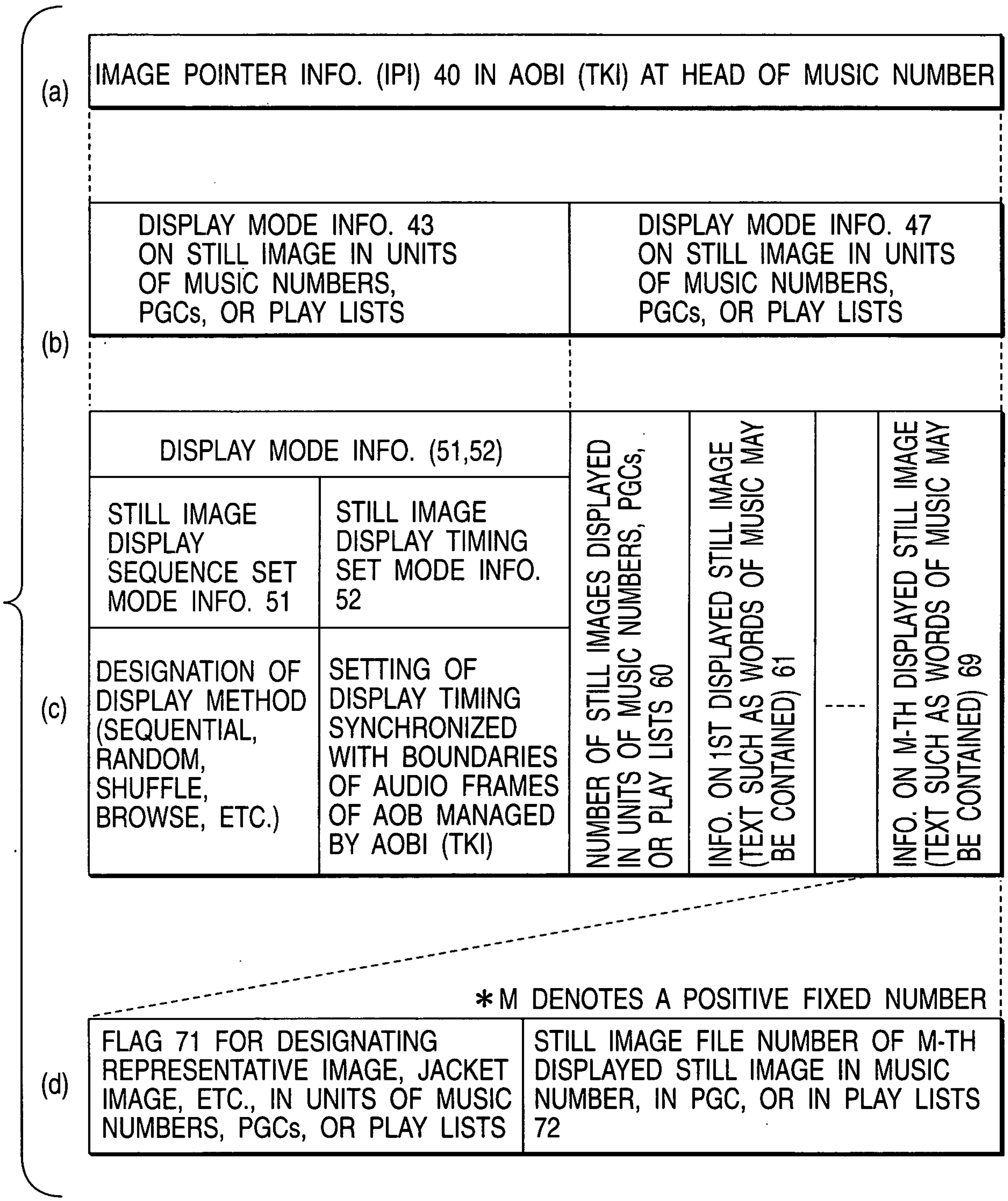

(a)
IOBSI. IFO FILE 2130
(IMAGE OBJECT SET INFORMATION RECODING REGION 142)
DATA SIZE WITH FIXED LENGTH
DATA SIZE WITH FIXED LENGTH
DATA SIZE WITH FIXED LENGTH
DATA SIZE WITH FIXED LENGTH
(b)
IOBSI MANAGEMENT INFO. 10
MANAGEMENT INFO. 1 CONCERNING IMG_01. IOB (COUNT INFO, OF IOB)
MANAGEMENT INFO. 2 CONCERNING IMG_02. IOB (COUNT INFO, OF IOB)
MANAGEMENT INFO. 9 CONCERNING IMG_999. IOB (COUNT INFO, OF IOB)
(c)
ATTRIBUTE INFO. 431 ON STILL IMAGE (IOB)
REPRESENTATIVE IMAGE (OR JACKET IMAGE, ETC.) DESIGNATION STATE INFO. 432
＊N DENOTES A POSITIVE FIXED NUMBER
(d)
STILL IMAGE COMPRESSION METHOD AND COMPRESSION VERSION INFO. 441
STILL IMAGE RESOLUTION INFO. 442
FLAG FOR DISCRIMINATING RECORDED/UNRECORDED STATE OF IMG_01. IOB (OR DATA PRESENCE/ABSENCE FLAG) 41＊
INFO. ON MUSIC NUMBER DESIGNATED AS REPRESENTATIVE IMAGE, ETC. 450
MUSIC NUMBER OR AOBI NUMBER/CI NUMBER/TKI NUMBER DESIGNATED AS FIRST REPRESENTATIVE IMAGE, ETC. 451
MUSIC NUMBER OR AOBI NUMBER/CI NUMBER/TKI NUMBER DESIGNATED AS N-TH REPRESENTATIVE IMAGE, ETC. 452
INFO. SIMILAR TO THOSE IS STORED IN MANAGEMENT INFO. 1 TO 9 OF IMG_xx.IOB (xx=01 TO 999)

FIG. 19


(a)
IMAGE POINTER INFO. (IPI) 40 IN AOBI (TKI) AT HEAD OF MUSIC NUMBER
(b)
DISPLAY MODE INFO. 43 ON STILL IMAGE IN UNITS OF MUSIC NUMBERS, PGCs, OR PLAY LISTS
DISPLAY MODE INFO. 47 ON STILL IMAGE IN UNITS OF MUSIC NUMBERS, PGCs, OR PLAY LISTS
(c)
DISPLAY MODE INFO. (51,52)
STILL IMAGE DISPLAY SEQUENCE SET MODE INFO. 51
STILL IMAGE DISPLAY TIMING SET MODE INFO. 52
DESIGNATION OF DISPLAY METHOD (SEQUENTIAL, RANDOM, SHUFFLE, BROWSE, ETC.)
SETTING OF DISPLAY TIMING SYNCHRONIZED WITH BOUNDARIES OF AUDIO FRAMES OF AOB MANAGED BY AOBI (TKI)
NUMBER OF STILL IMAGES DISPLAYED IN UNITS OF MUSIC NUMBERS, PGCs, OR PLAY LISTS 60
INFO. ON 1ST DISPLAYED STILL IMAGE (TEXT SUCH AS WORDS OF MUSIC MAY BE CONTAINED) 61

INFO. ON M-TH DISPLAYED STILL IMAGE (TEXT SUCH AS WORDS OF MUSIC MAY BE CONTAINED) 69
*M DENOTES A POSITIVE FIXED NUMBER
(d)
FLAG 71 FOR DESIGNATING REPRESENTATIVE IMAGE, JACKET IMAGE, ETC., IN UNITS OF MUSIC NUMBERS, PGCs, OR PLAY LISTS
STILL IMAGE FILE NUMBER OF M-TH DISPLAYED STILL IMAGE IN MUSIC NUMBER, IN PGC, OR IN PLAY LISTS 72

FIG. 20

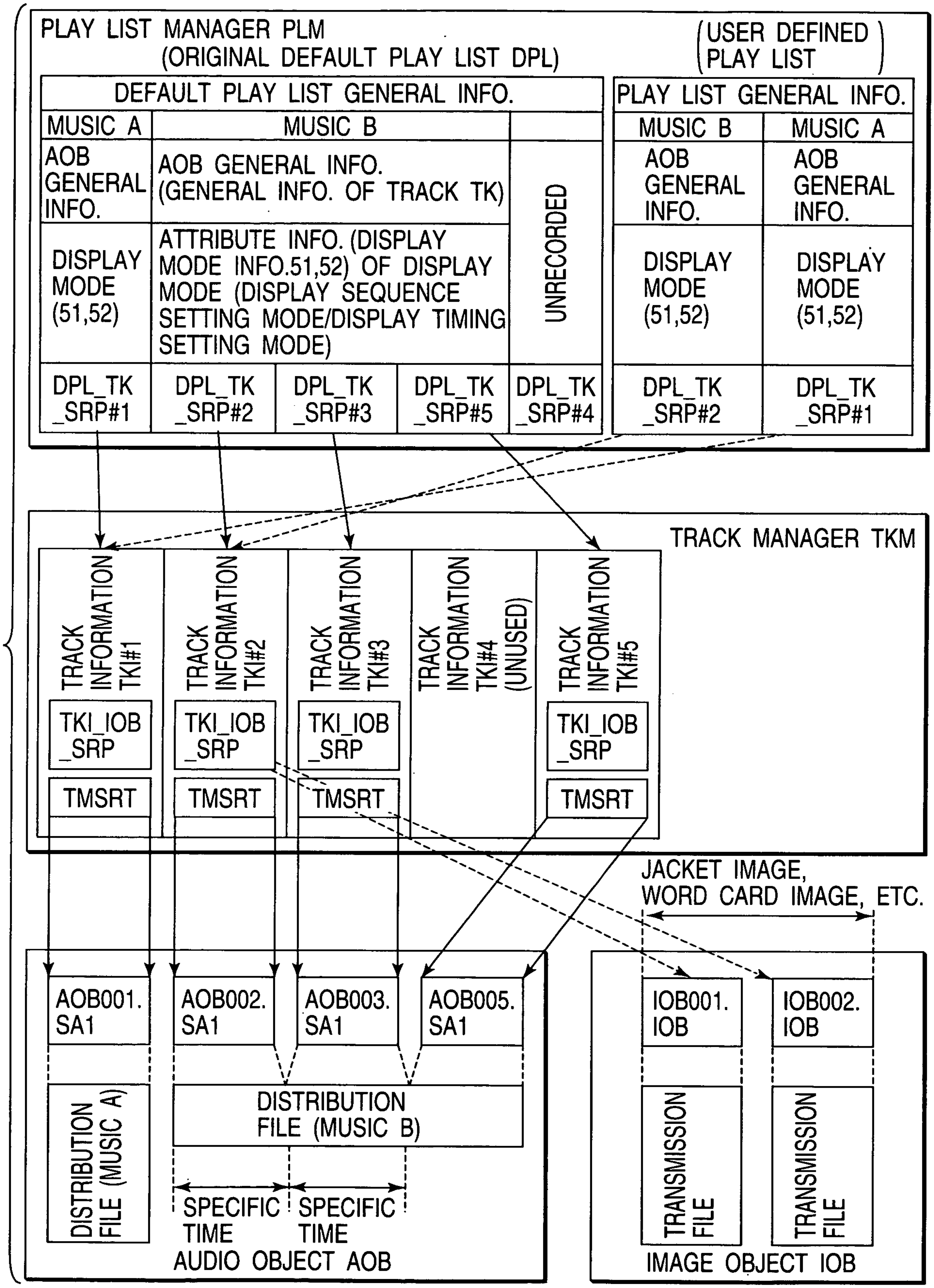

PLAY LIST MANAGER PLM
(ORIGINAL DEFAULT PLAY LIST DPL)
(USER DEFINED PLAY LIST)
DEFAULT PLAY LIST GENERAL INFO.
MUSIC A
MUSIC B
AOB GENERAL INFO.
AOB GENERAL INFO. (GENERAL INFO. OF TRACK TK)
DISPLAY MODE (51,52)
ATTRIBUTE INFO. (DISPLAY MODE INFO.51,52) OF DISPLAY MODE (DISPLAY SEQUENCE SETTING MODE/DISPLAY TIMING SETTING MODE)
UNRECORDED
DPL_TK _SRP#1
DPL_TK _SRP#2
DPL_TK _SRP#3
DPL_TK _SRP#5
DPL_TK _SRP#4
PLAY LIST GENERAL INFO.
MUSIC B
MUSIC A
AOB GENERAL INFO.
AOB GENERAL INFO.
DISPLAY MODE (51,52)
DISPLAY MODE (51,52)
DPL_TK _SRP#2
DPL_TK _SRP#1
TRACK MANAGER TKM
TRACK INFORMATION TKI#1
TRACK INFORMATION TKI#2
TRACK INFORMATION TKI#3
TRACK INFORMATION TKI#4 (UNUSED)
TRACK INFORMATION TKI#5
TKI_IOB _SRP
TKI_IOB _SRP
TKI_IOB _SRP
TKI_IOB _SRP
TMSRT
TMSRT
TMSRT
TMSRT
JACKET IMAGE, WORD CARD IMAGE, ETC.
AOB001. SA1
AOB002. SA1
AOB003. SA1
AOB005. SA1
DISTRIBUTION FILE (MUSIC A)
DISTRIBUTION FILE (MUSIC B)
SPECIFIC TIME
SPECIFIC TIME
AUDIO OBJECT AOB
IOB001. IOB
IOB002. IOB
TRANSMISSION FILE
TRANSMISSION FILE
IMAGE OBJECT IOB

FIG. 21

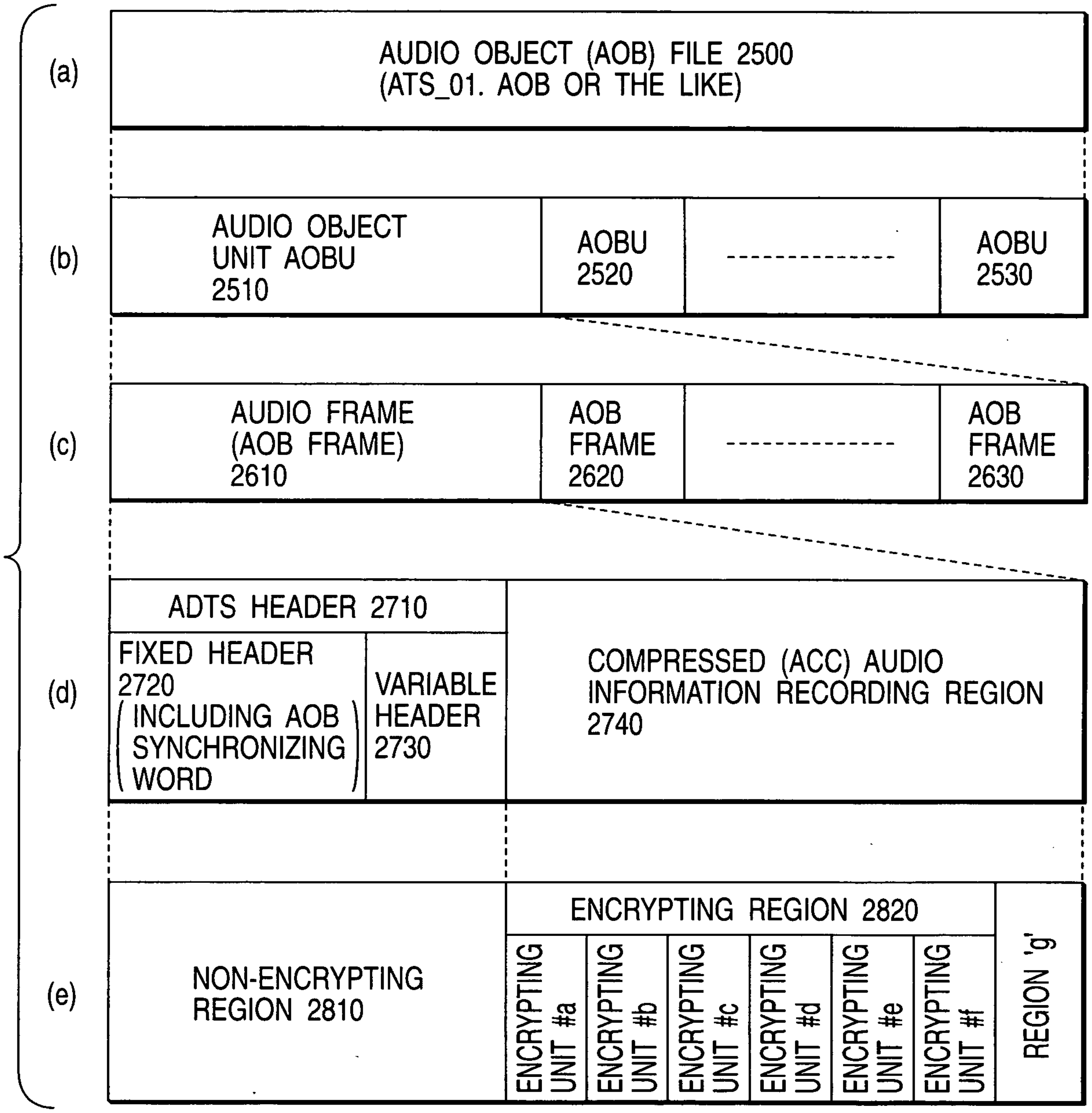

(a)
AUDIO OBJECT (AOB) FILE 2500
(ATS_01. AOB OR THE LIKE)
(b)
AUDIO OBJECT UNIT AOBU 2510
AOBU 2520
AOBU 2530
(c)
AUDIO FRAME (AOB FRAME) 2610
AOB FRAME 2620
AOB FRAME 2630
(d)
ADTS HEADER 2710
FIXED HEADER 2720 (INCLUDING AOB SYNCHRONIZING WORD)
VARIABLE HEADER 2730
COMPRESSED (ACC) AUDIO INFORMATION RECORDING REGION 2740
(e)
NON-ENCRYPTING REGION 2810
ENCRYPTING REGION 2820
ENCRYPTING UNIT #a
ENCRYPTING UNIT #b
ENCRYPTING UNIT #c
ENCRYPTING UNIT #d
ENCRYPTING UNIT #e
ENCRYPTING UNIT #f
REGION 'g'

FIG. 22

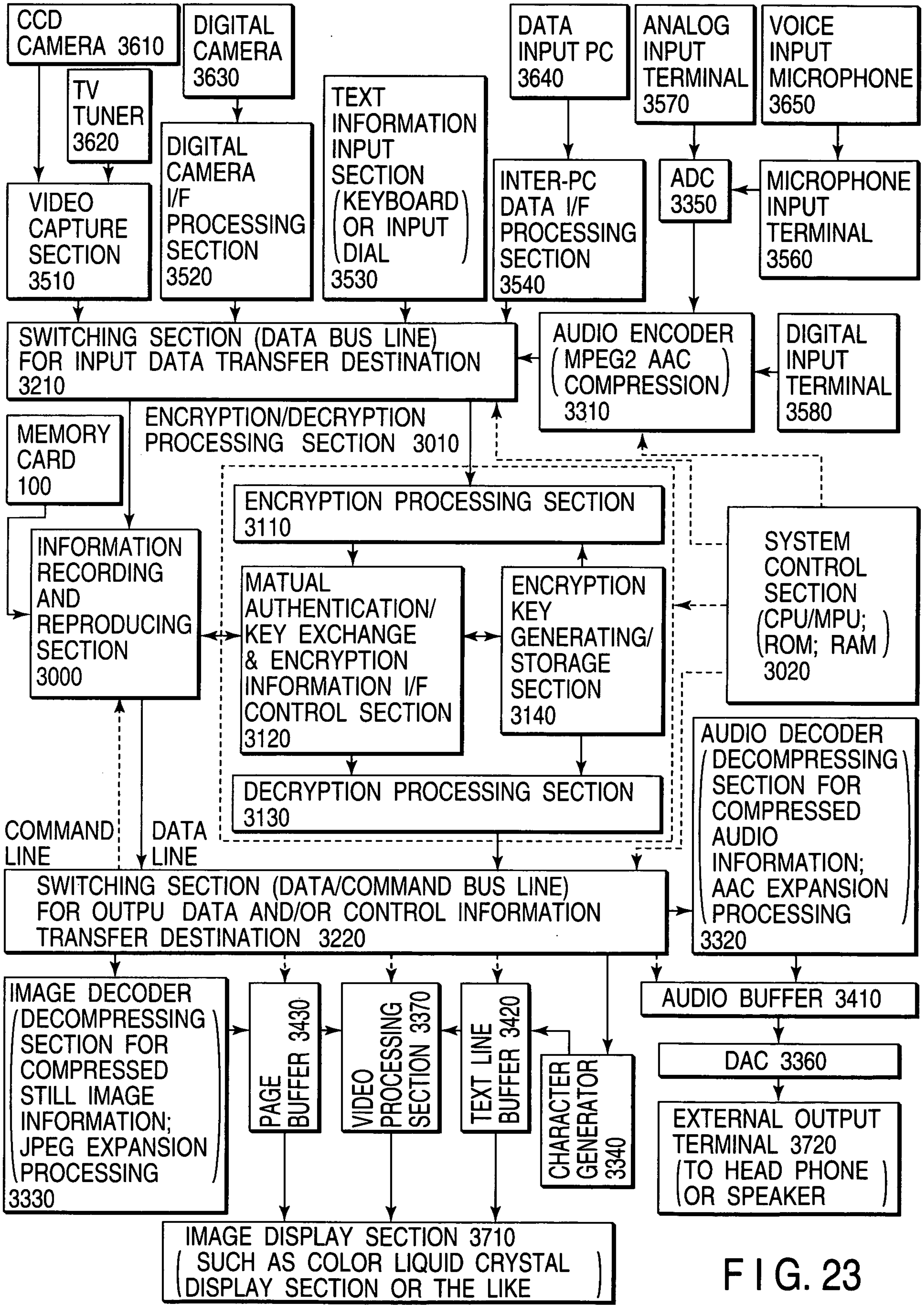

CCD CAMERA 3610
TV TUNER 3620
DIGITAL CAMERA 3630
DATA INPUT PC 3640
ANALOG INPUT TERMINAL 3570
VOICE INPUT MICROPHONE 3650
VIDEO CAPTURE SECTION 3510
DIGITAL CAMERA I/F PROCESSING SECTION 3520
TEXT INFORMATION INPUT SECTION (KEYBOARD OR INPUT DIAL) 3530
INTER-PC DATA I/F PROCESSING SECTION 3540
ADC 3350
MICROPHONE INPUT TERMINAL 3560
SWITCHING SECTION (DATA BUS LINE) FOR INPUT DATA TRANSFER DESTINATION 3210
AUDIO ENCODER (MPEG2 AAC COMPRESSION) 3310
DIGITAL INPUT TERMINAL 3580
MEMORY CARD 100
ENCRYPTION/DECRYPTION PROCESSING SECTION 3010
ENCRYPTION PROCESSING SECTION 3110
INFORMATION RECORDING AND REPRODUCING SECTION 3000
MATUAL AUTHENTICATION/ KEY EXCHANGE & ENCRYPTION INFORMATION I/F CONTROL SECTION 3120
ENCRYPTION KEY GENERATING/ STORAGE SECTION 3140
SYSTEM CONTROL SECTION (CPU/MPU; ROM; RAM) 3020
DECRYPTION PROCESSING SECTION 3130
AUDIO DECODER (DECOMPRESSING SECTION FOR COMPRESSED AUDIO INFORMATION; AAC EXPANSION PROCESSING) 3320
COMMAND LINE
DATA LINE
SWITCHING SECTION (DATA/COMMAND BUS LINE) FOR OUTPU DATA AND/OR CONTROL INFORMATION TRANSFER DESTINATION 3220
IMAGE DECODER (DECOMPRESSING SECTION FOR COMPRESSED STILL IMAGE INFORMATION; JPEG EXPANSION PROCESSING) 3330
PAGE BUFFER 3430
VIDEO PROCESSING SECTION 3370
TEXT LINE BUFFER 3420
CHARACTER GENERATOR 3340
AUDIO BUFFER 3410
DAC 3360
EXTERNAL OUTPUT TERMINAL 3720 (TO HEAD PHONE OR SPEAKER)
IMAGE DISPLAY SECTION 3710 (SUCH AS COLOR LIQUID CRYSTAL DISPLAY SECTION OR THE LIKE)

FIG. 23

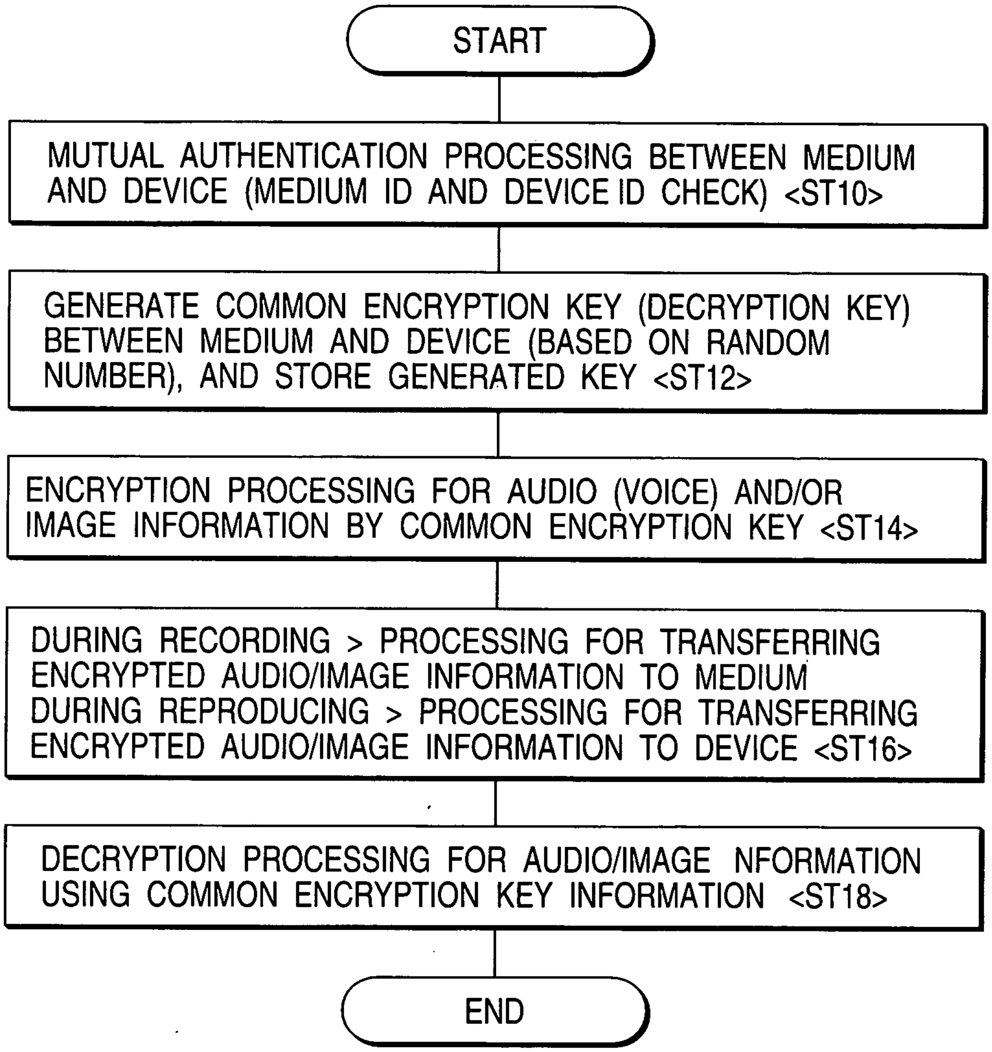

START
MUTUAL AUTHENTICATION PROCESSING BETWEEN MEDIUM AND DEVICE (MEDIUM ID AND DEVICE ID CHECK) <ST10>
GENERATE COMMON ENCRYPTION KEY (DECRYPTION KEY) BETWEEN MEDIUM AND DEVICE (BASED ON RANDOM NUMBER), AND STORE GENERATED KEY <ST12>
ENCRYPTION PROCESSING FOR AUDIO (VOICE) AND/OR IMAGE INFORMATION BY COMMON ENCRYPTION KEY <ST14>
DURING RECORDING > PROCESSING FOR TRANSFERRING ENCRYPTED AUDIO/IMAGE INFORMATION TO MEDIUM
DURING REPRODUCING > PROCESSING FOR TRANSFERRING ENCRYPTED AUDIO/IMAGE INFORMATION TO DEVICE <ST16>
DECRYPTION PROCESSING FOR AUDIO/IMAGE NFORMATION USING COMMON ENCRYPTION KEY INFORMATION <ST18>
END

FIG. 24

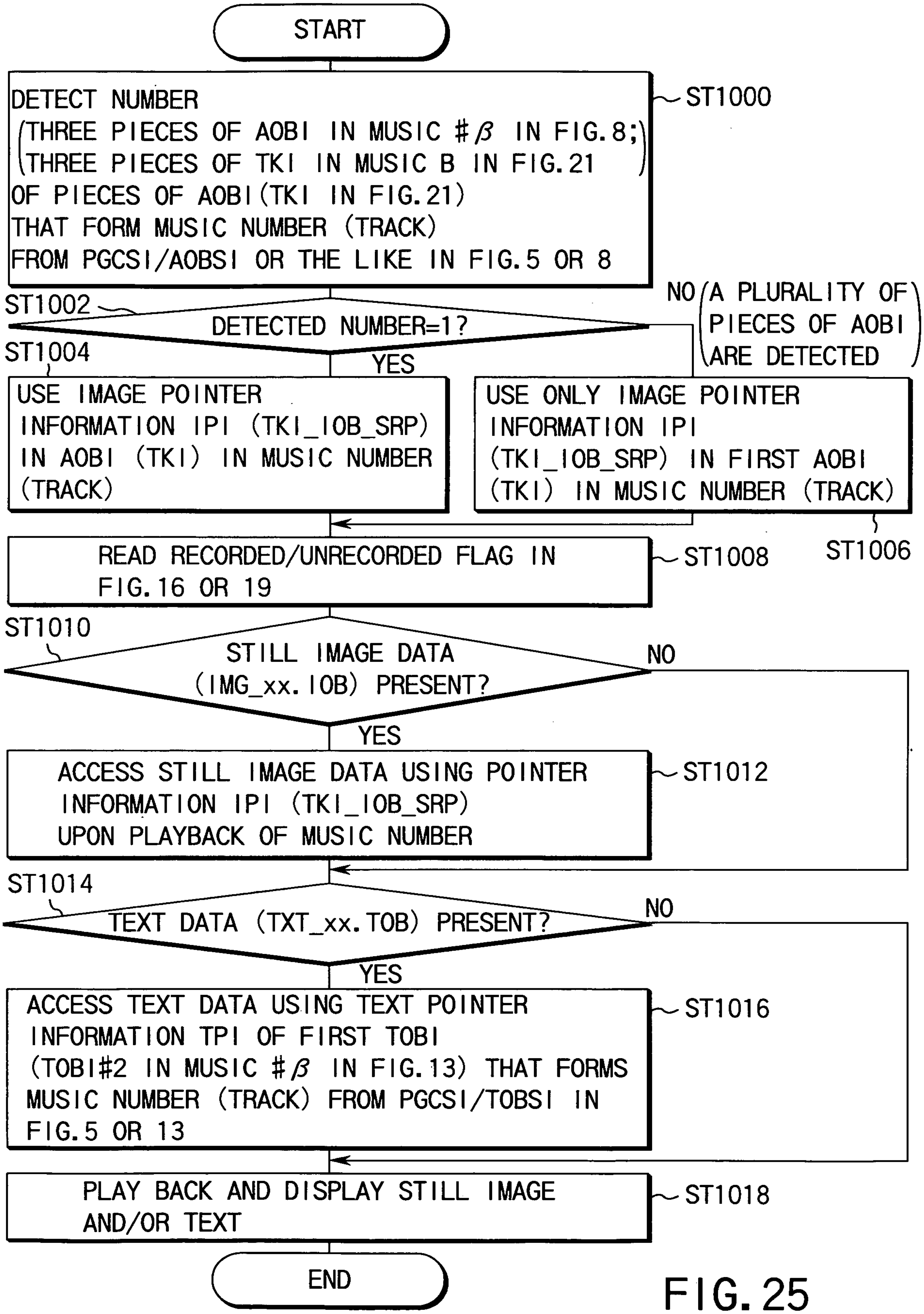

START
DETECT NUMBER
(THREE PIECES OF AOBI IN MUSIC #β IN FIG.8;
THREE PIECES OF TKI IN MUSIC B IN FIG.21)
OF PIECES OF AOBI(TKI IN FIG.21)
THAT FORM MUSIC NUMBER (TRACK)
FROM PGCSI/AOBSI OR THE LIKE IN FIG.5 OR 8
ST1000
ST1002
DETECTED NUMBER=1?
NO
(A PLURALITY OF PIECES OF AOBI ARE DETECTED)
YES
ST1004
USE IMAGE POINTER INFORMATION IPI (TKI_IOB_SRP) IN AOBI (TKI) IN MUSIC NUMBER (TRACK)
USE ONLY IMAGE POINTER INFORMATION IPI (TKI_IOB_SRP) IN FIRST AOBI (TKI) IN MUSIC NUMBER (TRACK)
ST1006
READ RECORDED/UNRECORDED FLAG IN FIG.16 OR 19
ST1008
ST1010
STILL IMAGE DATA (IMG_xx.IOB) PRESENT?
NO
YES
ACCESS STILL IMAGE DATA USING POINTER INFORMATION IPI (TKI_IOB_SRP) UPON PLAYBACK OF MUSIC NUMBER
ST1012
ST1014
TEXT DATA (TXT_xx.TOB) PRESENT?
NO
YES
ACCESS TEXT DATA USING TEXT POINTER INFORMATION TPI OF FIRST TOBI (TOBI#2 IN MUSIC #β IN FIG.13) THAT FORMS MUSIC NUMBER (TRACK) FROM PGCSI/TOBSI IN FIG.5 OR 13
ST1016
PLAY BACK AND DISPLAY STILL IMAGE AND/OR TEXT
ST1018
END

FIG. 25

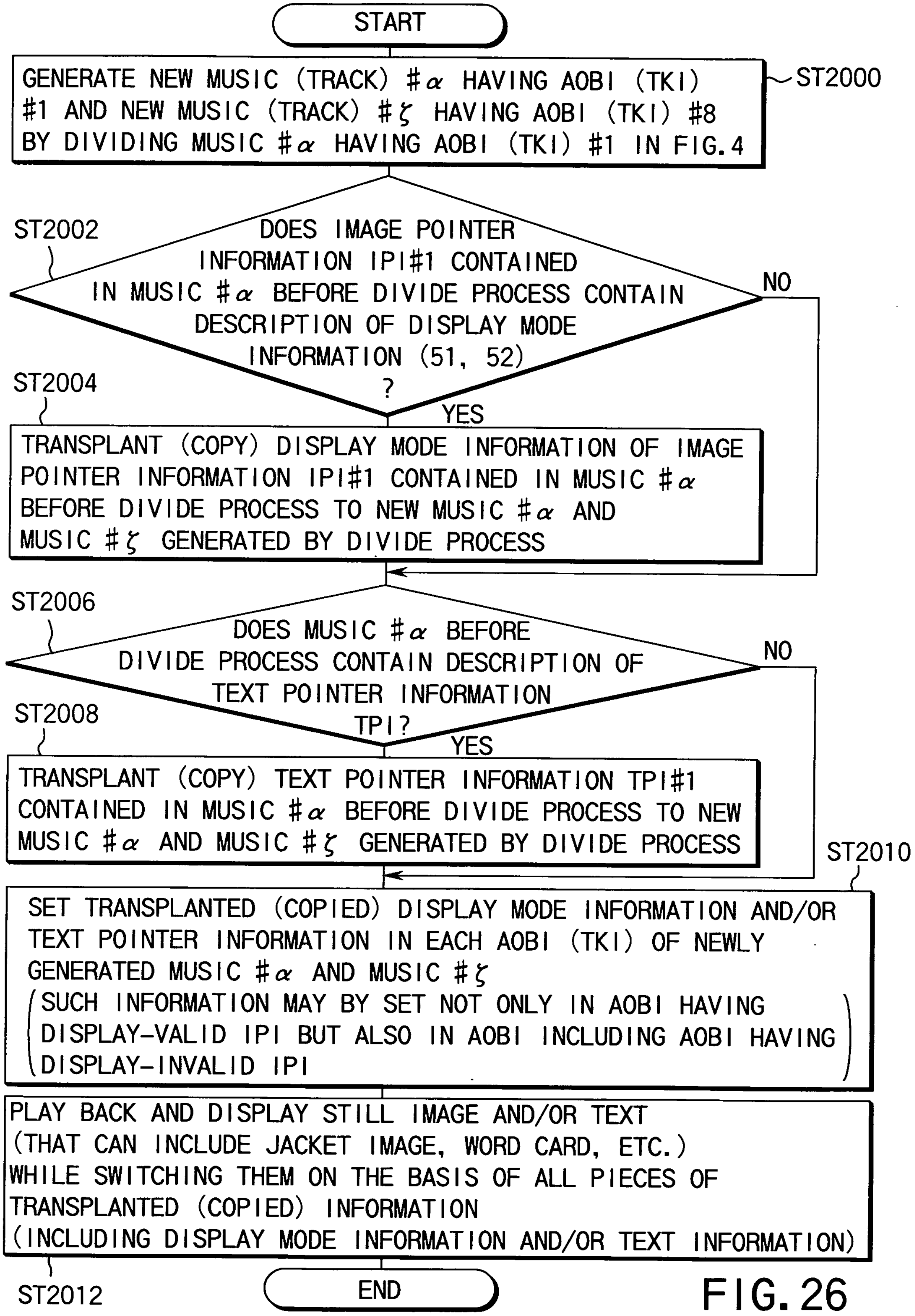

START
GENERATE NEW MUSIC (TRACK) #α HAVING AOBI (TKI) #1 AND NEW MUSIC (TRACK) #ζ HAVING AOBI (TKI) #8 BY DIVIDING MUSIC #α HAVING AOBI (TKI) #1 IN FIG.4
ST2000
ST2002
DOES IMAGE POINTER INFORMATION IPI#1 CONTAINED IN MUSIC #α BEFORE DIVIDE PROCESS CONTAIN DESCRIPTION OF DISPLAY MODE INFORMATION (51, 52) ?
NO
YES
ST2004
TRANSPLANT (COPY) DISPLAY MODE INFORMATION OF IMAGE POINTER INFORMATION IPI#1 CONTAINED IN MUSIC #α BEFORE DIVIDE PROCESS TO NEW MUSIC #α AND MUSIC #ζ GENERATED BY DIVIDE PROCESS
ST2006
DOES MUSIC #α BEFORE DIVIDE PROCESS CONTAIN DESCRIPTION OF TEXT POINTER INFORMATION TPI?
NO
YES
ST2008
TRANSPLANT (COPY) TEXT POINTER INFORMATION TPI#1 CONTAINED IN MUSIC #α BEFORE DIVIDE PROCESS TO NEW MUSIC #α AND MUSIC #ζ GENERATED BY DIVIDE PROCESS
ST2010
SET TRANSPLANTED (COPIED) DISPLAY MODE INFORMATION AND/OR TEXT POINTER INFORMATION IN EACH AOBI (TKI) OF NEWLY GENERATED MUSIC #α AND MUSIC #ζ
(SUCH INFORMATION MAY BY SET NOT ONLY IN AOBI HAVING DISPLAY-VALID IPI BUT ALSO IN AOBI INCLUDING AOBI HAVING DISPLAY-INVALID IPI)
PLAY BACK AND DISPLAY STILL IMAGE AND/OR TEXT (THAT CAN INCLUDE JACKET IMAGE, WORD CARD, ETC.) WHILE SWITCHING THEM ON THE BASIS OF ALL PIECES OF TRANSPLANTED (COPIED) INFORMATION (INCLUDING DISPLAY MODE INFORMATION AND/OR TEXT INFORMATION)
ST2012
END

FIG. 26

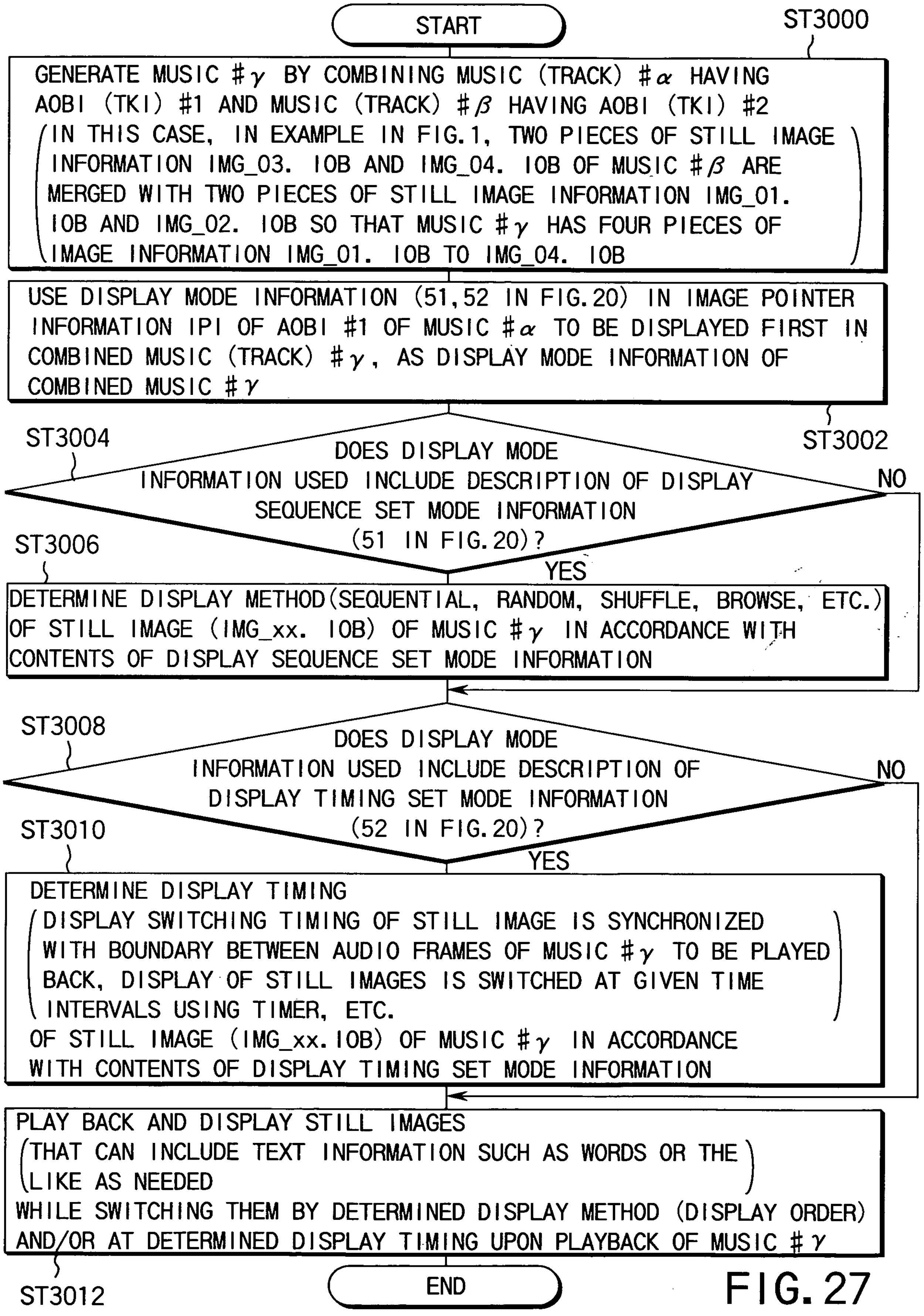

START
ST3000
GENERATE MUSIC #γ BY COMBINING MUSIC (TRACK) #α HAVING AOBI (TKI) #1 AND MUSIC (TRACK) #β HAVING AOBI (TKI) #2
(IN THIS CASE, IN EXAMPLE IN FIG. 1, TWO PIECES OF STILL IMAGE INFORMATION IMG_03. IOB AND IMG_04. IOB OF MUSIC #β ARE MERGED WITH TWO PIECES OF STILL IMAGE INFORMATION IMG_01. IOB AND IMG_02. IOB SO THAT MUSIC #γ HAS FOUR PIECES OF IMAGE INFORMATION IMG_01. IOB TO IMG_04. IOB)
USE DISPLAY MODE INFORMATION (51, 52 IN FIG. 20) IN IMAGE POINTER INFORMATION IPI OF AOBI #1 OF MUSIC #α TO BE DISPLAYED FIRST IN COMBINED MUSIC (TRACK) #γ, AS DISPLAY MODE INFORMATION OF COMBINED MUSIC #γ
ST3002
ST3004
DOES DISPLAY MODE INFORMATION USED INCLUDE DESCRIPTION OF DISPLAY SEQUENCE SET MODE INFORMATION (51 IN FIG. 20)?
NO
YES
ST3006
DETERMINE DISPLAY METHOD (SEQUENTIAL, RANDOM, SHUFFLE, BROWSE, ETC.) OF STILL IMAGE (IMG_xx. IOB) OF MUSIC #γ IN ACCORDANCE WITH CONTENTS OF DISPLAY SEQUENCE SET MODE INFORMATION
ST3008
DOES DISPLAY MODE INFORMATION USED INCLUDE DESCRIPTION OF DISPLAY TIMING SET MODE INFORMATION (52 IN FIG. 20)?
NO
YES
ST3010
DETERMINE DISPLAY TIMING
(DISPLAY SWITCHING TIMING OF STILL IMAGE IS SYNCHRONIZED WITH BOUNDARY BETWEEN AUDIO FRAMES OF MUSIC #γ TO BE PLAYED BACK, DISPLAY OF STILL IMAGES IS SWITCHED AT GIVEN TIME INTERVALS USING TIMER, ETC.)
OF STILL IMAGE (IMG_xx. IOB) OF MUSIC #γ IN ACCORDANCE WITH CONTENTS OF DISPLAY TIMING SET MODE INFORMATION
PLAY BACK AND DISPLAY STILL IMAGES
(THAT CAN INCLUDE TEXT INFORMATION SUCH AS WORDS OR THE LIKE AS NEEDED)
WHILE SWITCHING THEM BY DETERMINED DISPLAY METHOD (DISPLAY ORDER) AND/OR AT DETERMINED DISPLAY TIMING UPON PLAYBACK OF MUSIC #γ
ST3012
END

FIG. 27

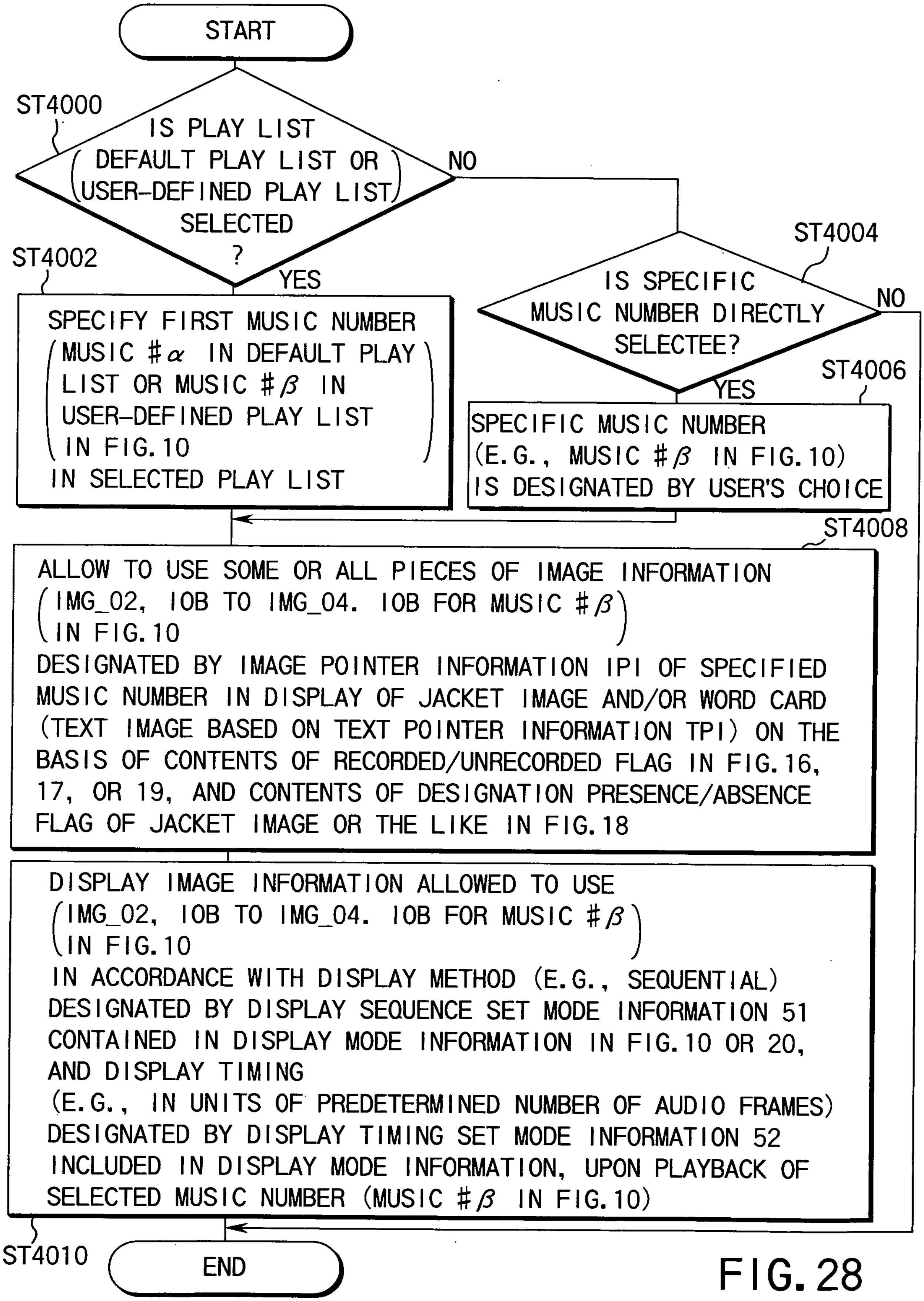

START
ST4000
IS PLAY LIST (DEFAULT PLAY LIST OR USER-DEFINED PLAY LIST) SELECTED ?
NO
YES
ST4002
SPECIFY FIRST MUSIC NUMBER (MUSIC #α IN DEFAULT PLAY LIST OR MUSIC #β IN USER-DEFINED PLAY LIST IN FIG.10) IN SELECTED PLAY LIST
ST4004
IS SPECIFIC MUSIC NUMBER DIRECTLY SELECTEE?
NO
YES
ST4006
SPECIFIC MUSIC NUMBER (E.G., MUSIC #β IN FIG.10) IS DESIGNATED BY USER'S CHOICE
ST4008
ALLOW TO USE SOME OR ALL PIECES OF IMAGE INFORMATION (IMG_02, IOB TO IMG_04. IOB FOR MUSIC #β IN FIG.10) DESIGNATED BY IMAGE POINTER INFORMATION IPI OF SPECIFIED MUSIC NUMBER IN DISPLAY OF JACKET IMAGE AND/OR WORD CARD (TEXT IMAGE BASED ON TEXT POINTER INFORMATION TPI) ON THE BASIS OF CONTENTS OF RECORDED/UNRECORDED FLAG IN FIG.16, 17, OR 19, AND CONTENTS OF DESIGNATION PRESENCE/ABSENCE FLAG OF JACKET IMAGE OR THE LIKE IN FIG.18
DISPLAY IMAGE INFORMATION ALLOWED TO USE (IMG_02, IOB TO IMG_04. IOB FOR MUSIC #β IN FIG.10) IN ACCORDANCE WITH DISPLAY METHOD (E.G., SEQUENTIAL) DESIGNATED BY DISPLAY SEQUENCE SET MODE INFORMATION 51 CONTAINED IN DISPLAY MODE INFORMATION IN FIG.10 OR 20, AND DISPLAY TIMING (E.G., IN UNITS OF PREDETERMINED NUMBER OF AUDIO FRAMES) DESIGNATED BY DISPLAY TIMING SET MODE INFORMATION 52 INCLUDED IN DISPLAY MODE INFORMATION, UPON PLAYBACK OF SELECTED MUSIC NUMBER (MUSIC #β IN FIG.10)
ST4010
END

FIG. 28